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NEWSPAPER

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GRAPHIC DESIGN BY
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SOME WILL GO — HUNGRY

Corporate data processing budgets are still growing but at a slower rate than over the past three years. Managers participating in *Computerworld's* annual DP budget survey reflected a conservative attitude toward spending, with indications that they will hire fewer staff, buy less software and in general try to make do with existing facilities to serve their organizations even as they expand services.

A greater percentage of respondents claimed an increase in their budgets for 1985 — 82.7% as opposed to 67% in 1984, but the growth rate in DP budgets slipped again for 1985. In a continuing downward spiral from last year's 12.4%, 1983's 17% and 1982's 20.3% increase rates, the DP managers surveyed recently indicated an overall increase in their

By Donna Raimondi

ANNUAL DP BUDGET SURVEY

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budgets of 9.89%.

The majority of respondents — 42% — felt no improvement at all from what Washington, D.C., officials have labeled the economic recovery. About a quarter of the managers said the economic recovery has had a beneficial effect on their DP budget, most of them noting slight increases in spending. Five of 49 respondents cited decreases resulting from the economy that ranged from hiring freezes to discharge of personnel.

When Congress cut the manpower allocation for the U.S. Army Corps of Engineers, office automation became necessary in order to cope with the work load, which remained the same, said Edward Gutwald at the Corps' South Atlantic Division in Atlanta. But automating the office has cost money, especially in time and training, and there have been no extra people or money to do the job, he said.

The DP department has become more responsible for microcomputer expenses. This year, slightly more than half of the managers indicated that microcomputers will be purchased from their DP budgets, compared with 37.7% of micro expenses will come from end-user budgets. In 1984, microcomputers came 50:50 from DP and end-user budgets; in 1983, 19 managers said end-users paid for micros and only six indicated DP departments paid.

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Salaries — the single largest budget item — account for 43% of DP budgets — the same this year as last year. Increases in those departments reporting higher spending for salaries will average 7.3%, up from 5.7% a year ago. Programmer/analysts ate up the greatest share of the salaries budget — 29% — followed by computer operators at 17%, programmers at 14% and DP/MIS managers and systems analysts at 12% each.

The fastest growing item in the salary budget is the DP/MIS manager/director salary, which grew 6.6% from 1984. Computer operators have increased salary expenses by 6%, followed by programmer analysts, 4.9%, and programmers, 4.3%.

Power managers plan to hire new personnel in 1985 — 50% as opposed to 37% who planned to hire for 1984. Programmer analysts, computer operators and programmers head the list of new hires.

It is still not easy to find qualified personnel, but compared to the last two years, this problem is less severe. More than half (52.5%) of the respondents said chain to have had trouble finding qualified DP personnel in the past year, but last year the figure was 55%, and in 1983, 82% of respondents claimed difficulty.

This year, systems programmer positions have been the most difficult to fill (35.3% followed by programmer/analyst slots (25.9%).

There are not enough systems software specialists out there, said G. D. Springer, director of information systems at Atlantic Aviation Corp. in Wilmington, Del. It is also difficult to pay the salaries that such people command, he added.

There is an overall decrease of 3.8% in the personnel turnover rate. The majority of managers — 63.5% — said their turnover rate stayed the same, with 22.6% of companies experiencing less turnover and 18.1% claiming greater turnover.

Maintenance tasks

Maintenance tasks are taking up more of programmers' time, managers reported. The average proportion of time spent on maintenance came out to 65.3% this year, an overall increase from last year's 45.4%. New development tasks account for the rest of programmers' time. In 1985's survey, DP heads said that programmers shared their time equally between maintenance and new development.

Fewer DP shops will purchase software this year — only 67.3% of the group polled will acquire new software packages in 1985, as opposed to 80% who budgeted for software in last year's survey.

Software expenses comprise 12% of the total DP budget for 1985, broken down as follows:

- Application software — 7%
- Systems software — 5%

This is a decrease from last year when software accounted for 19.6% of the total budget and is more in line with 1983, when software costs averaged 10% of the total amount.

The majority of managers planning to acquire new software will buy business application packages such as accounting, financial and human resources packages. Others will add systems aids such as librarian and productivity packages. Four managers budgeted for data base management systems; several are buying fourth-generation languages and microcomputer products. Three DP heads will purchase micro-to-mainframe links.

Hardware vendors — especially IBM — should be happy to learn that

76.9% of the group surveyed plan to buy hardware products, as opposed to 70% last year. Of the 14 managers who will purchase mainframes, seven said they will install IBM's 4300 series and three are planning to acquire IBM 30 series machines.

In the minicomputer category, one manager plans to buy 10 IBM System/36 computers, and on order at six shops are four Digital Equipment Corp. VAX-11 computers, three Hewlett-Packard Co. HP 3000s and one HP 3000.

Peripherals are high on the man-

In answer to a question about their primary concerns for 1985, 18 out of 49 managers expressed distress about personnel — mentioning difficulties in finding, training, paying, retaining and getting enough productivity out of their staffs.

agers' shopping lists, as are microcomputers. Of the 13 managers reporting plans for microcomputer purchase, one plans to acquire 400 Wang Laboratories, Inc. Professional micros, and another will install 100 unspecified microcomputers. Three respondents will purchase IBM Personal Computer ATs.

Thirty-five percent of the total DP budget will go to hardware, broken down as follows:

- Mainframes — 18%.
- Minicomputers — 6%.
- Microcomputers — 6%.
- Peripherals — 7%.

The survey group reported that 37.1% of their allotted hardware monies will go to license fees for mainframes, and another 11.3% will pay for license fees for minis and supermins.

Microcomputer and data communications expenses showed up as the fastest growing budget items in this year's survey, although each category makes up less than 5% of the total DP budget. Microcomputer hardware spending increased by 28%, followed by data communications at 17%.

Minicomputer expenses — 6% of the total DP budget — showed a 14.9% increase rate over 1984 figures, followed by application software — 7% of the total budget — at 14.1% and systems software — 8%

of the total budget — at 10.3%.

AT&T divestiture-related problems continue to plague many managers. More than 41% of survey respondents said the action has led to worsened conditions, including confusion and delays in communications planning, increased costs and more billing errors. More than half of the companies surveyed felt no impact from the divestiture, and a couple of managers used the divestiture to improve their communications procedures.

"The divestiture forced us to re-

think our communications expenses," said Dennis Steizer, president of NBC/Computer Services Corp. "I say, 'thanks AT&T,' " he added. "We worked on multiplexing lines to up the speeds to get more terminal devices on them, added different concentrator-type devices and changed some protocols. We went from asynchronous to bisynchronous to decrease the lines we needed," he said.

Concerns for 1985

In answer to a question about

their primary concerns for 1985, 18 out of 49 managers expressed distress about personnel — mentioning difficulties in finding, training, paying, retaining and getting enough productivity out of their staffs.

Ten respondents said their greatest concerns were with microcomputers. Three of these managers are trying to find the documentation to help make the microcomputer's place in overall long-range planning goals, two mentioned worries about linking their microcomputers to mainframes, and one each was concerned about evaluation, management or support of micros. One respondent mentioned a "contest of personal computer proliferation" in his company as one of his biggest concerns.

Right DP heads said they are concerned with end-user problems. One each of the managers surveyed was trying to implement or increase information centers, four expressed problems with sufficient resources for user requests or services. One manager said the lack of user cooperation was a problem for him and another wished to increase the users' understanding of DP functions.

Six managers said their greatest concern was with the overload on their hardware or services. One of these managers is faced with a 30% per year growth rate and worries about keeping his system's ability and quality; others are either trying to keep the load on the system manageable or trying to improve the system to state-of-the-art technology.

Communication among systems, divisions and networks was an expressed concern of six managers.

BUDGET GROWTH

'82 20.3%

'83 17%

'84 12.4%

'85 9.89%

SALARIES

Programmer 14% up 4.8%

DP/MIS manager 12% up 6.6%

Programmer/ analyst 29% up 4.9%

Computer operator 17% up 6%

Qualified programmers, analysts difficult to find

Qualified data processing personnel are hard to find, according to more than half of the DP managers polled for *Computerworld*'s annual DP budget survey. Although some difficulty exists in locating staff for any slot in a DP department, the rarest find is a good programmer or programmer/analyst, according to the group polled.

Finding programmer analysts with appropriate, applicable skills is a tough problem for Glenn Lukowicz of St. Luke's Hospital, in New Bedford, Mass. "The words to stress here are applicable and appropriate," Lukowicz said.

He has hired college graduates who have learned plenty of theory that is not in line with present-day needs, he added. They do not know current standards, and they are five to six years behind the times, he said.

Lukowicz has advertised in newspapers and searched agencies for dedicated, competent, pride-oriented programmers with good program development standards, he said. He said he pays above-average salaries and offers a working environment that includes fast response time, color CRT terminals, flexible hours and participation in presentations of new products and decision making, and still has trouble finding people.

"[People do not] want to test or finalize their projects," he claimed, "they only want to code."

"We don't have IBM equipment — we have [Honeywell, Inc.] — and we don't even expect to find Honeywell experience," said John Kosial of the Dukane Corp. in St. Charles, Ill. Most of the systems people who come from college computer science programs are technically minded, and they do not understand the business applications they are called upon to develop, he said. They have difficulty in comprehending the users' needs, he added.

Kosial said he finds that the people he interviews are more concerned with salaries or living in a nice area than with pride in their jobs, he said. Dukane — a company that generates revenues worth about $40 million annually — pays competitive wages and offers above average working conditions, he said.

Trainees avoided

The company now avoids trainees because it is a lot of work to bring them up to snuff, and when they finally have a grasp on the work, they leave for higher salaried jobs, Kosial said.

"On performance reviews, the trainee will put down as an accomplishment what he has learned, not how [he] has helped the company," he said.

G. D. Springer, director of infor-

mation systems at General Aviation Sales and Service in Wilmington, Del., noted three problems he has with hiring systems programmers: There are not enough systems programmers, there are even fewer systems people with [Cullinet Software, Inc.] IDMS experience, and even if he finds one, he cannot afford to pay him, he said.

In the Wilmington area, all three of these problems are exacerbated because 15 large banks — including Bankers Trust Co. and Chase Manhattan Bank — have moved here since the beginning of 1984 to take

advantage of favorable, new state banking laws. Springer is competing with the banks for staff and finds that the salary — in the high twenties — that his company, which generates revenues worth $180 million annually, can offer a systems analyst with a degree and/or appropriate experience is not enough.

The last two resumes he received distressed him, Springer said. One was from a person with a degree and no experience who wanted a salary of $30,000, the other from a person with minimal practical experience in a small installation who wanted $39,000.

Once a good analyst is hired, Springer said, he is worth another $8,000 a year in the marketplace after gaining a couple of years of experience. Because General Aviation cannot give such hefty raises so quickly, analysts leave the company for greener pastures, he said.

Interns hired on per diem basis

Lukowicz of St. Luke's has partially solved his hiring problems by offering internships to vocational/ technical high school students and students at post-high-school technical institutes. If he finds a particularly talented intern, he hires that person on a per diem basis until a position opens.

Springer advertises in newspapers and contacts agencies that specialize in locating the kind of people he needs, but he is not having much luck, he said. Kosial has worked out an admittedly nonscientific method for determining an interviewee's worth, he said. Looking first at how a person sells himself, he takes all sloppy or unreadable resumes and puts them aside. He then interviews the people with impressive resumes, spending a lot of time going over important points.

"Some know how to sell themselves, but they stretch the truth about what they know," he said. He avoids people with college degrees in other disciplines, such as psychology, because he has found over the years that they are in DP because it pays well and not because they like it, he added.

DIALING FOR DOLLARS

Bruised and suffering from a few broken ribs, users are emerging from the first year of the AT&T divestiture sore but intact. And perhaps smarter. Although ill-equipped to capitalize on it yet, the heightened industry awareness foisted on users by the Bell system breakup has sown the seeds of change.

In this year of communications line back orders, facility service nightmares and burgeoning options, telecommunications managers have had to adapt to keep their heads above water. In an October speech to the Communications Managers Association on Long Island, N.Y., Donald Procknow, vice-chairman of AT&T Technologies, likened the environment created by divestiture to reading *War and Peace*. "Divert your attention for a minute, and it's hard to pick up again."

Users, however, have faced up to the task. The explosion of interest in T1 digital facilities is a good bellwether, showing the responsibility — in network design, implementation and management — that users are willing to shoulder now that it is no longer possible to do one-stop shopping with AT&T.

In retrospect, the communications users who foresaw the divestiture storm and, in anticipation, battened down the hatches by factoring delays into their plans and limiting expansion and moves, fared far better than those who hoped they would be able to weather the cataclysm.

Not even AT&T properly estimated how painful the dissection of the Bell operating companies would be. The first clue came early in the year when orders for communications lines began backing up, caught in a coordination glitch between AT&T Communications, the provider of long-distance facilities, and the divested Bell operating companies, which provide local connections.

Horror stories mounted. Line installation delays, which were running up

By John Dix

to six months, were only part of it. Facilities were arbitrarily disconnected. Circuit records were bungled. Company accounts were lost. And many Bell service account representatives were reassigned, leaving the hapless user with nowhere to turn.

In July, the private-line logjam peaked at 44,800 back orders. Wats and 800-service back orders topped out at 36,000. Slowly, the millions of dollars AT&T poured into the job of cleaning up this mess began to take effect.

Today, 58% of private-line orders are installed on time, compared with 29% in July. In October, private-line back orders had been cut to 23,400. While admitting it has a long way to go, AT&T happily reports that Wats and 800-service orders are now nearing normalcy.

Concern over procuring and maintaining communications lines went hand-in-hand this year with worries about how much these facilities would cost.

Before the breakup actually occurred, industry seers were predicting that the divested local Bell operating companies' rates would rocket through the roof and that long-distance rates would plummet.

> *The divested Bell operating companies have successfully pushed many rate increases through their respective state public utility commissions but not to the tune many had forecast.*

Yes and no. The 22 divested Bell operating companies, now grouped within seven independent regional holding companies, have successfully pushed many rate increases through their respective state public utility commissions but not to the tune many had forecast. Long-distance rates have not seen any precipitous decline. To the contrary, some long-distance companies like MCI Communications Corp., have, in fact, raised their rates.

Given the state-by-state regulation of local rates, it's hard to quantify local increases. But this year, all divested Bell operating companies began charging federally approved line charges that include:

■ Customer Access Line Charges (Calc) for businesses with multiple phone lines. Beginning in May, the divested Bell telephone companies began charging business customers a flat charge for each telephone line they operated. These charges ranged by state from a low of $2.25 to a legal maximum of $6 but averaged $5 per line per month.

■ A $2 per line per month Calc for Centrex lines in place before July and the regular business Calc for Centrex lines installed thereafter.

■ A $25 surcharge for private lines. The divested Bell operating companies started billing this surcharge in November, although it started to accrue in August. It applies to private lines that are connected to switching or other types of equipment that is capable of rerouting traffic into the local-exchange network. Because of this, the surcharge generally applies to voice circuits rather than data links. The surcharge applies to both ends of an interexchange circuit and only one end of a link that stays within the same exchange.

Implementation of access-line charges directly on business customers — changing somewhat the way the divested Bell operating companies recover costs from AT&T — resulted in a 6.1% reduction in AT&T's Message Toll Service and Wats service. This was the only AT&T rate change that materialized in 1984.

One change that never came about was AT&T's proposed private-line rates, originally filed in October 1983. These proposed rates were substantially higher than the old private-rate tariffs because they reflected increases that the divested operating companies and other local-exchange carriers had proposed to charge AT&T for special access.

The special access dilemma

Special access is the type of connection local-exchange carriers provide long-distance companies to complete private-line circuits. Users never see this charge directly — long-distance private lines are procured from a single carrier who coordinates local connections at both ends of the circuit through exchange carriers — but as the long-distance carrier's cost to connect to the local network increases, it will usually be reflected in the rate it charges the end user.

A spokesman for the Federal Communications Commission said that the special access rates proposed by the local-exchange carriers ranged up to 800% depending on location and type of service. These increases were reflected in AT&T's proposed 1983 end-user private-line rates, although the actual increase was offset somewhat because AT&T had proposed lowering its cost per mile rate.

In 1984, the FCC found the special access rates to be unlawful and rejected them. As a result, the proposed private-line rate shock never came about.

Page Montgomery, vice-president of Economics and Technology, Inc., a telecommunications consulting firm in Boston, said that because of this, many of his company's clients is the

Fortune 100 are fairing well.

"Most of our clients that did budgets based on the proposed October 1983 numbers report that they are well under their budgets," he noted. "They might still be paying a little more than they did in 1983 — because of the $6 Colc, for example — but when you average it out, they are well below what they had projected."

We are, however, near the end of this grace period.

New rates expected

New special access rates are expected to be approved by the FCC and to be put in place by the local exchange carriers by Jan. 17. After analyzing these tariffs and compensating for them, AT&T is expected to refile its end-user private-line rates with the FCC around March 1, Montgomery said. "Under this scenario, these rates would go into effect sometime between April 15 and June 1."

Just what the new private-line rates will be is still unclear. Economist Alan Pearce, president of Information Age Economics in Washington, D.C., said the only thing that is certain for 1985 is "significant private-line rate restructuring, where some private-line offerings will go up in price, some will stay the same, and some will go down." Generally, Peace expects to see the price of lower speed analog facilities to be increased and higher speed digital facilities to drop.

The length of this scenario will also have an effect on whether its cost increases or decreases. Montgomery said that AT&T may lower its private-line rates, but the end user will still see significant increases because of the way the tariffs are structured. Today, private lines are tariffed on an end-to-end basis, but in the future, AT&T will price out access components separately, components that will reflect the increased amount it has to pay local-exchange carriers for special access.

Longer circuits more economical

Under such a structure it becomes obvious that the longer circuits are more economical. Montgomery said that even when AT&T incorporated 100% to 110% special access increases into its proposed 1983 rates, private-line users that had circuits extending over 850 miles would have seen absolute rate reductions because of the offset effect of new, lower dollar-per-mile charges. The break-even point that will determine rate increases/decreases will drop below 850 miles now that the FCC has mandated that special access charges be lowered.

As a category of service, private-line rates will go up because they have been underpriced in the past, an FCC spokesman said. Additionally, the rates of alternate carriers can be expected to increase more than any AT&T rates. This is because the alternate carriers — including MCI Communications Corp. and GTE Sprint Communications Corp. — have been paying the same amount for special access since 1974. This amount will be increased over time until they pay the same amount as AT&T.

The FCC agreed to phase in the special access increases over time to lessen the blow to the alternate carriers. As an example, Western Union,

Inc. will pay $300,000 in special access charges next year, and $500,000 — the full amount — by January 1986, according to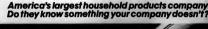 Montgomery. "One expects that these higher rates will eventually be reflected in the carrier's end-user rates," the FCC spokesman said.

As private-line tariffs become more economical, the rate differences between carriers erode, users will be spurred to look for more drastic alternatives. By bypassing telephone companies — both local and long-distance carriers — users can take control of rates and realize other benefits, such as implementation of wide bandwidth facilities and control of installation schedules.

Bypass became a byword in 1984, encouraged by rate turmoil, line delays and service problems, but is still more talked about than practiced.

As a category of service, private-line rates will go up because they have been underpriced in the past.

This is due, in part, to the fact that users are still waiting until the divestiture dust settles and all the rate cards have been played before calculating the potential of bypass.

Many large companies, however, already practice some type of bypass. According to Jerry Lucas, president of Telestrategies, Inc., a research and consulting firm in McLean, Va., "half of the companies in the Fortune 100 already have bypass systems in place or are very

actively looking at [bypass]." He estimated the 1984 bypass market to be about $600 million.

There are three basic types of bypass:

■ Circumvention of local telephone company circuits by linking buildings with line-of-sight microwave or infrared light systems.

■ Sidestepping the local telephone company by running a direct link from a corporation or institution to a long-distance carrier's point-of-presence within a local telephone company's jurisdiction.

■ Total bypass of all telephone companies by operating a private premises-to-premises communications system.

There are many technologies that can be used to achieve the types of bypass outlined. The most prevalent technology used in bypass is micro-

wave radio systems, typically employed in the first manner mentioned.

Other technologies will mature next year. According to Mark Stahlman, a research analyst with Sanford C. Berstein and Co., an investment research and management firm in New York, "1985 is going to be a good year in terms of the coming to fruition of a lot of these technologies that have been in the development stage [during] the last two or three years. Whether or not the market will develop still remains to be seen."

One technology that Stahlman is predicting will be deployed next year is the use of CATV networks to bypass local telephone companies. "The major companies involved with CATV-based data and voice systems began developing systems in 1982

and 1983 and, given two- to three-year development cycles, 1985 is the year the major suppliers and some independents will begin testing."

Another promising technology that both Locas and Stahlman are expecting to see further developed in 1986 is low-cost, two-way satellite systems. Using something called spread spectrum technology, companies like Equatorial Communications Co. of Moutain View, Calif., can offer services that use small, inexpensive, two-way satellite earth stations.

Stahlman said that spread spectrum technology, which enables use

AT&T may lower its private-line rates, but the end user will still see significant increases because of the way the tariffs are structured.

of small earth stations by replicating satellite signal elements, will be brought together with direct broadcast satellite (DBS) techniques in 1986 to spawn a new bypass market. DBS systems were originally conceived to broadcast television signals directly to homes, but because this market has been sluggish, "companies that invested in DBS are going to be compelled to try to address business communications problems." Xerox Corp.'s Computer Services Division recently announced a service that marries these two technologies.

The outlook for other bypass tech-

nologies looks less rosy. For example, digital termination systems (DTS), point-to-multipoint digital microwave systems that provide bypass of telephone company local loops, are floundering. Lucas said the problem is that "there isn't enough capacity for widespread use. You can barely make a penny on data-only services," which are essentially what DTS supports.

Like most bypass systems, DTS exists at the sufferance of established carriers. Lucas said that the DTS industry has been dampened by AT&T's proposed Dataphone Digital Service rates, its digital service, which are substantially lower than previous rates.

But bypass is not always justified economically. Indeed, Stahlman noted, one of the primary misperceptions about the utility of bypass is that it will provide a less costly alternative to telephone company local loops. In reality, bypass is used where telephone companies cannot provide needed facilities in a timely fashion. Additionally, some corporations bypass their local carriers because the needed service, perhaps a high-speed digital link, is not available.

Knowing this, many of the divested operating companies — including New York Telephone Co. in New York — are installing fiber-optic networks that some customers will be allowed to access directly.

Such market-driven responses are indicative of change within the telecommunications industry necessitated by AT&T divestiture. While obscured by the problems it created, the competitive benefits of the Bell system dissection will probably be, in the long run, good for the user. Pollyannas point to service options created, competitive pricing and the betterment of communications technology. Critics question the wisdom of removing incentives for divested Bell system companies to offer universal service at fair prices; they wonder what the long-term implications will be of commercializing Bell Laboratories — especially in light of heightened international technological competition — and ask, will the Bell system be put back together again in 10 years?

AT&T breakup expands equal access opportunities

By John Dix
CW Staff

As a condition of AT&T's divestiture, the former Bell operating companies are required to provide all long-distance carriers with the same quality connections to their local networks. By September 1986, under terms of the so-called equal-access divestiture provision, roughly one-third of all local telephone switches are to be upgraded for equal access. By September 1986, 70% of all exchange switches are to be updated.

Equal access essentially puts carriers like MCI Communications Corp. and GTE Sprint Communications Corp. on a footing-equal to AT&T. It increases service quality of the alternate carriers, enables their services to be accessed by

dialing a single digit as with AT&T and provides the carriers with the signaling elements necessary to provide accurate billing, all of which are factors important to corporate users.

As equal access becomes available, users will be asked by their local telephone company to choose a primary long-distance carrier. That carrier will henceforth be accessed by dialing the digit "1," just as the long-distance grid of AT&T has been selected for all those years.

In addition, users can access carriers other than their primary choice by dialing "10" and a three-digit carrier identification code. Known as the "10XXX" dialing option, this does away with the pre-equal access need to access alternate long-distance companies by dialing the carrier,

entering an identification code and then dialing the desired number.

For corporate users, the advantages of equal access requires careful analysis of applicable tariffs. Once assessed, least-cost routing tables in a company's private branch exchange (PBX) can be updated so that traffic is automatically routed over alternate carriers where favorable tariffs are available.

Some PBX manufacturers' least-cost routing schemes are not capable of identifying the 10XXX digits needed to access nonprimary carriers. Besides ensuring that capability, users should find out how much reprogramming for equal access will cost and what it will entail — on-site updating or a new load from the vendor.

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Latas: mapping the divested Bell companies

By John Dix
CW Staff

It is perhaps fitting that the acronym for Local Access Transport Area, or Lata, sounds like it belongs in a surveyor's lexicon, because it is in fact used to distinguish geographical boundaries.

When AT&T divested itself of the Bell operating companies, the jurisdiction of each local company was subdivided into areas known as Latas. These areas determine which traffic can be carried by the local operating companies and which has to be handled by a long-distance or inter-Lata carrier.

The 22 Bell operating companies were divided into more than 160 Latas, depending mostly on the population density of a given area. Wyoming, Rhode Island and Maine, for example, are among the states that are considered single Latas, whereas California has 10 Latas, and Texas has 14.

Logistically, the creation of Latas has vastly complicated the life of users. Circuits that were once the province of a single operating company may now cross a Lata and require the involvement of an inter-Lata carrier such as AT&T or MCI Communications Corp. That same circuit, once identified by a single number, may now have three circuit identification numbers, complicating record keeping and the reporting of service problems. Additionally, because inter-Lata and intra-Lata circuits share similar price differences as interstate vs. intrastate services once did, network cost optimization is more difficult.

Given the differences in Lata pricing, many consultants are advocating network configurations that minimize circuit contamination, a condition that results when a line crosses from one Lata into another. Circuits that are contained within Latas can be interconnected at hubs, which can in turn be networked, which would minimize inter-Lata circuits and at least theoretically limit expense.

By John Desmond

CLEAR AND PRESENT DANGER

O ctober 1983: A truck carrying a ton of explosives drives through sandbags into the courtyard of a U.S. Marine barracks in Beirut, Lebanon, and detonates with devastating force. The building collapses, and more than 240 Marines lose their lives. A terrorist group takes responsibility for the action.

MELVILLE, N.Y. — On the morning of August 22, 1984, at the General Electric Co. offices here, a man walked into the building with an attache case, deposited the case in a stairwell and walked out.

At 10 a.m. that day, a caller identifying himself as a member of the United Freedom Front (UFF) told a receptionist that a bomb had been planted in the building. Corporate security was notified, and a guard spotted the attache case in the stairwell. The case was conveniently labeled "bomb," according to Stanley Klein, chief of the terrorism section within the FBI's criminal investigation group. The bomb was a "standard terrorist-improvised explosive device" consisting of dynamite, a battery and a timer, Klein said.

The Suffolk County police began evacuating the building at 11:21 a.m., and at 11:26 a.m., the bomb went off. Walls buckled, windows shattered, half the roof was blown off, and the second-, third- and fourth-floor stairwells were heavily damaged. No one was injured, primarily because the terrorists furnished ample warning.

"The difference between terrorist groups in the U.S. and overseas is the level of violence they're willing to achieve," according to Klein. "In this country, terrorists want to make statements without turning people off. It doesn't seem to me that they're willing to take the step of going into loss of life."

The threat of terrorist attacks against U.S. data centers is a little-considered risk. But vulnerability to terrorists is not only a problem for U.S. military outposts in the Middle East, Western Europe or Central America. The U.S. has grown dependent upon complex data processing systems for its institutional well-being. The U.S. Marines could withdraw from Lebanon, but U.S. data centers cannot withdraw from their vulnerability to terrorist

attacks. Methods are available for analyzing and reducing the risk, but in the DP community, awareness of the seriousness of the problem is in small proportion to the risk itself.

Moreover, it can happen here.

In five instances between 1971 and 1978, IBM installations in the U.S. and Mexico were attacked. In March 1976, a Hewlett-Packard Co. electronic circuit manufacturing site in Palo Alto, Calif., was bombed. And in May 1976, bombs were exploded on two floors of a building housing the DP facilities of Central Maine Power in Kennebec, Maine, according to records compiled by Belden Menkus, a management consultant who in 1983 published *Notes on Terrorism and Data Processing*, an analysis of the threat of terrorism to DP centers.

'There is historical warrant to expect frontal assaults on data centers, placement of explosives on-site, vandalization and arson.'

— Belden Menkus, management consultant

These were all isolated incidents, according to Menkus, who concluded that terrorists have so far "failed to recognize the role of DP in perpetuating the social/economic structure." However, he added that "there is historical warrant to expect frontal assaults on data centers, placement of explosives on-site, vandalization and arson."

So perhaps the intelligent terror-

ist has not yet arrived. In October, Georgetown University's Center for Strategic and International Studies (CSIS) in Washington, D.C., warned of the terrorist threat in a report titled, "America's Hidden Vulnerabilities." The report concluded that computer systems should be safeguarded against acts of terrorist sabotage intended to disrupt or cripple society. The report was compiled by a panel of military and foreign affairs experts, including Chairman R. James Woolsey, a former U.S. Navy undersecretary, and Robert H. Kupperman, a senior associate at CSIS who served on the panel's cochairman.

At a press conference announcing the report's release, Woolsey said, "Imagine what would happen to the personal finances of everyone in this room if a terrorist destroyed records of bank accounts, investments, Social Security and mortgages all at once." The report states that vulnerable funds transfer networks exchange money equal to the federal budget — $645 billion — every two to four hours.

Kupperman said Computerworld that while the greatest terrorist threat is in Europe, "in the U.S., the prospects for terrorism are increas-

ing." Spillover from areas such as the Middle East is possible here, he suggested, noting the attack on an IBM office in New York two years ago by the Black Liberation Army, an action protesting the company's business dealings in South Africa.

"Such organizations and maybe some more Weather Underground-like organizations are going to get it into their heads to rob computer facilities," he said. He advised DP and information center managers to take the terrorist threat seriously, to "begin to figure out how much protection will cost" and to take reasonable precautions against unexpected attack.

Sperry Corp. became more conditioned to expect the unexpected when, on Aug. 10, 1984, two persons entered a company cafeteria plant in Eagan, Minn., and used hammers to smash millions of dollars worth of computer equipment. A back panel and power supply were damaged, causing a $55,000 to $65,000 loss. The plant gained entry despite the fact that the plant was surrounded by a fence and had posted guards.

According to Tom Kunz, in charge of facilities protection at the plant, the pair is believed to have shown false identification to pass through the gate. Since then, Kunz said, the plant has tightened security with improved badges, a reduced number of entry points and added guards. Kunz said, "When the object [of an intruder] is to go in and damage something, it makes for a very difficult situation."

The difficulty of protecting against the unpredictable is perhaps best expressed by Jake's Law, which says, "With a big enough hammer, you can break anything." Jake's Law is promulgated by Donn P. Parker, a senior management systems consultant for SRI International, Inc., of Menlo Park, Calif., an acknowledged leader among security experts and the author of *Fighting Computer Crime*. SRI recommends that businesses adopt a realistically sober attitude about the threat of terrorism. "It certainly is a risk. The critical question is, how big a risk is it? Nobody knows," Parker said.

SRI has documented 33 attacks against buildings housing data centers in Italy, France and West Germany in the last five years, many by the Red Brigade in Italy, Parker said. In comparison, few attacks have taken place in the U.S., yet the nature of terrorists with the goal of disrupting society is to strike at any time. "All of a sudden, some organization we haven't heard about could pop up, and there could be massive attacks all over the country. People would

ask why they weren't warned. It puts the criminal justice community in a very difficult position," Parker said.

Some have charged that the threat of terrorism in the U.S. is being blown out of proportion, especially by individuals who stand to profit from the fear of terrorism. Oliver Revell, the assistant director of the FBI's criminal investigation division, said in November that the nation is becoming unnecessarily alarmed about terrorism. "I think there are a number of people crying wolf and waiting for the sky to fall in," Revell said. "I get tired of hearing [about] the imminent doom they are predicting. We're the ones who have the terrorists on the run, not the other way around."

Parker is not so sure. His impression of those who have spoken about the threat of terrorism is that most are "conscientious people who have seen what can happen. They look at the U.S. as becoming dependent on fragile technology, and they feel a responsibility to speak out."

The question of how industry should respond to the terrorist threat is debated as much as the dimensions of the threat itself. The CSIS report recommends that companies perform risk analysis in which they estimate an annual expected loss. The theory states that "investment in any specific measure for risk reduction is economically justified when the measure's cost is less than the expected reduction in loss that it is intended to achieve," according to the report.

Risk analysis is among the federal government's Health Care Financing Administration's security requirements for Medicare contractors. According to Don Abramson, computer systems analyst with the System Security and Testing Group of the financing administration, "The problem with risk analysis is that a lot of people are not comfortable with trying to get broad estimates. Auditors want verifiable facts and figures. But we use experts to outline risks using common sense and a systemized approach, something that can inspire management to do something."

Total Assets Protection, Inc., an Arlington, Texas-based company specializing in computer security, performs a business impact analysis as opposed to a risk analysis.

"We go in and find out the value of keeping the data center up and running. We show them their exposures and vulnerabilities," said Dick Bessenhoffer, vice-president of facilities design and planning at the company.

"We try to balance the risk with the cost to protect. You can't have protection costing more than the computer going down."

While practiced in various forms, risk analysis is not universally accepted. SRI, for instance, does not believe in risk analysis. "We do not base our recommendations on risk analysis, because there are no valid statistics on which you can justify spending money," Parker said. Figures used to discuss the impact of computer crime are often pulled from thin air, he said. Parker cited a recent American Bar Association study that estimated the impact of computer crime to be $145 million to $730 million, adding, "I say that's nonsense; that has nothing to do with reality." He said no valid statistical studies have been performed in the area, and there is no method of collecting such statistics.

At SRI, Parker said, "We base our recommendations on generally accepted practices or reasonable and prudent business practices. Companies should install significant physi-

'The major deficiency [of DP security] is that many of these people can't see beyond their noses. They're living on the fact that nobody has blown up their place or come in with a gun.'

— Dick Bessenhoffer,
Vice-president of facilities
design and planning, Total
Assets Protection, Inc.

cal safeguards [to ensure that] if anything does happen, [they will] avoid embarrassment, the liability of stockholder suits and actions in court because they have done reasonable things." He said his clients "gradually come around to understanding the situation."

IBM may have come to understand the situation better after the UPF planted a bomb in the company's Harrison, N.Y., offices in March. According to IBM spokesman Michael Dutton, IBM is now taking steps to protect its property from physical harm. Asked to detail the measures in effect, Dutton said, "It would be counterproductive for us to discuss publicly the steps we are taking to protect IBM property."

Practical precautions

However, Dutton said that IBM does believe it is practical to protect itself against unpredictable incidents such as the UPF bombing. IBM's security personnel and DP professionals are working together to prevent damage to data centers, he said.

SRI recommends adopting the measures taken by companies like IBM to achieve a baseline of security. "We tell them they cannot afford not to do it," Parker said. Companies that follow SRI's recommendations "will probably wind up with less security than they should for the really bad things that can happen but more than they would have if it was a benign world out there,"

Parker said.

Few statistical figures exist on the adequacy of company and data center security, but security authorities give the impression that security could be better. SRI evaluates a firm's level of security on a scale of one to 10, 10 being most secure. Commenting on security levels the company has observed in its evaluations, Parker said the average SRI client has a security rating of five, but many have security ratings of two or three. "We try to move them up to six or seven — not eight or nine, that's too much," Parker said. "Security of six or seven is prudent and would reduce the loss from an attack."

Jack Bologna, who heads Computer Protection Systems, Inc., a corporate security firm in Plymouth,

Security specialists outline basics of protection plan

MENLO PARK, Calif. — The basics of physical security for data centers have not changed in many years, according to Donn B. Parker of SRI International, Inc., one of the world's leading authorities on computer security. Parker was project manager of a 1982 report on computer security prepared for the U.S. Department of Justice in which 82 controls in use at seven computer field sites were reviewed.

Physical security methods employed at well-run computer centers included the following:

■ Housing computers in one room and peripherals in a different room.
■ Low building profile.
■ Secure building perimeter.
■ Emergency preparedness.
■ Security for sensitive areas during unattended periods.
■ Designated areas where smoking and eating are prohibited.
■ Minimizing traffic and access to work areas.
■ Physical access barriers.
■ Remote terminal security.
■ Universal use of badges.
■ Alternative power supply.

The report suggested that baseline of security can be established for each business, be it bank, insurance company or manufacturer. Security experts and consultants should be able to agree on the objectives of a security program. Computer security administrators and the management responsible for security expenditures should agree on a number of specific controls. "As computer-using organizations adopt the baseline approach for selection of controls, they will increasingly rely on the best security controls used most successfully by other organizations," the report said.

In his book *Fighting Computer Crime*, published in 1983, Parker suggested that access controls allow only authorized persons into the computer room, which should be built with a raised floor and false ceiling in the safest part of a building. He suggests allowing only operators, security officers, maintenance engineers, system programmers and escorted visitors into the computer room. And he recommends more remote access aids to restrict the presence of people in the computer room.

Among the more exceptional types of physical security devices in the proximity release door opener. Authorized persons wear a badge with a radio frequency transmitter inside. When close enough to an electrically locked door, the signal automatically opens it. A scanner ensures that no one follows behind. A computer could check to see if the badge wearer is authorized to enter at that day and time. If the person failed to leave by an expected time, an alarm would sound.

The method assumes the person entering is authorized to have the badge. "The key-thief problem can

'The key-thief problem can only be solved by permanently fastening the key to the person — not a pleasant idea.'
— Donn B. Parker, SRI International, Inc.

only be solved by permanently fastening the key to the person — not a pleasant idea," Parker stated. The author suggested that foolproof access control methods, probably those using physiological identifiers such as brain waves, will be perfected in the near future.

Total Assets Protection of Arlington, Texas, a company of computer security specialists and architectural and engineering consultants, has a systematic approach to serving its clients. Dick Bessenhoffer, vice-president of facilities design and planning for the firm, said a security evaluation begins at the property perimeter and works inside. Initial basics include fencing, alarms, cameras, lighting, a security force, patrols and local police cooperation. Next, doors, windows and location of data center are considered, then access control doors, alarm doors and motion detectors in certain areas. For sensitive areas with two sets of doors and a foyer, Total Assets recommends a "man trap," with access control devices on the inside and outside doors, augmented by closed-circuit television. The company also visits its clients' data centers at night, on the second or third shift, when employees are often less sensitive to security needs.

Companies should better coordinate data center security with their overall building security plans, suggested Oliver Wainwright, leader of the American Society for Industrial Security's Standing Committee on Physical Security. "I think you'll find a lack of coordination" between data processing staffs and building security staffs, Wainwright said. The committee focuses mainly on environmental controls such as temperature, plumbing and electrical systems; anti-intrusion methods such as indoor and outdoor perimeter devices and internal backup devices; and fire protection.

While the committee does not have broad, specific survey information on how well protected the Fortune 1,000 firms are, it did recently complete a survey of anti-intrusion hardware. Among the conclusions were that companies are moving toward more proprietary security systems that terminate in-house rather than at local police departments. The local police are being looked to more for backup, the survey showed. Of those responding, 41% said they would prefer to terminate alarms at the local police station, while 52% said they would prefer to terminate in-house.

Wainwright believes it is important for data centers to be protected with physical security systems. "Most data centers hold a great deal of intellectual property. If there is no protection, a company leaves itself open for a lot of liability," Wainwright said.

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Mich., estimated that 26% of Fortune 1,000 firms have no disaster recovery plans at all. Beyond that, he estimated that 25% to 50% of firms have inadequate plans. "They really don't believe there's a threat or else they're preoccupied with marketing and production issues and not physical security," he said.

Total Assets Protection's Bessenhoffer said most companies have inadequate physical security measures in place. "The major deficiency is that most of these people can't see beyond their noses. They're living on the fact that nobody has blown up their places or come in with a gun," he said.

Recommendations by the Georgetown University panel on how industry and government should respond to the threat of terrorism included providing tax write-offs for investments in risk reduction and reducing insurance costs for companies that invest in risk reduction.

Insurance aspect key

SRI judged the insurance premium aspect to be important. "We're strongly pushing that. The whole insurance industry has been a sleeping giant on this subject. It's never really understood just how fragile things have become," Parker said. "Once insurance companies set premiums based on the degree of security you have, it will become an important factor in how much a business will spend on physical protection."

That may take some time. According to Dean P. Pelton, a vice-president at Marsh & McLennan Co. in New York, physical security is not directly reflected in insurance premiums. "I don't think any insurance person could say physical security in and of itself would be directly reflected in insurance rates. It would be reflected in the underwriter's attitude on whether to accept the risk."

The degree of physical security is considered when an insurance company is deciding to accept a risk, he said. A minimum standard of physical security is expected depending on the visibility of the business and its attractiveness as a target, Pelton said. "That is not a formula-based approach, it's an emotional approach. You need that latitude because risks vary" he said.

Change in attitude

While he sees no momentum emerging for a change in attitude among underwriters to reflect degrees of physical security in premiums, he does see a change in the attitude of business. "There's an increasing sensitivity on a daily basis to the need for physical security at data centers," he said.

St. Paul Fire and Marine Co. of St. Paul, Minn., which in 1961 issued the first electronic data processing policy in the U.S., does recognize the value of physical security when setting premiums, according to Marr Haack, the firm's production manager of electronics and information technology. "The better risk is the more secure center," he said. A large data center with excellent security could pay premiums 25% to 50% less than the average large data center insured by St. Paul, Haack said.

Adding a caveat for DP centers, the FBI's Klein said, "If you look at terrorist groups throughout the world and note the fact they are becoming more sophisticated and that their targets seem to be ones that would have the greatest impact on American policy, it is certainly within the realm of feasibility that if terrorists could get to a company's computer, it would be a prime target."

The SAS System. . .

Physical security system checks computer room access

MILWAUKEE — DP managers who need physical security cannot wait for the perfect system. Blue Cross/Blue Shield United of Wisconsin here and the Federal Reserve Bank of Chicago are using standard means to protect against unauthorized entry.

Blue Cross/Blue Shield United of Wisconsin has a multilevel physical security system that begins with perimeter security and carries into the computer room, according to Jordan D'Acquisto, security supervisor at the Milwaukee facility. All doors on the first floor are one way with no locks on the outside. Every door is checked by an alarm, except the main lobby entrance. At a security

station in the lobby, visitors must sign in and be escorted by the person they are there to see.

All doors leading to the third-floor DP level are checked by an alarm, except for the elevator doors. Closed-circuit TV cameras with motion alarms monitor the DP floor, which is sectioned off. In the mainframe computer room, half the data center floor is completely enclosed in a room within a room. "If someone wants to sabotage our computer system, he would have to get into that secured area," D'Acquisto said. Six doors provide access to the main computer room, and each door has an alarm.

Access-card readers service the

computer room doors. Employees have cards to get into assigned areas; some may have access to only one-half the computer room or to the tape library only.

Blue Cross/Blue Shield United has never experienced a serious attempt to damage its data center, D'Acquisto said. Unauthorized people have tried to walk into the building, "But they never really get past the first level of security," he said.

Minimum security required

To service government contracts such as Medicare, the Blue Cross data center is required by the federal government to have certain minimum security provisions. "The au-

ditors tell us what we need and what we don't," D'Acquisto said.

The Privacy Act of 1974 required the government to institute certain minimum safeguards for protecting the integrity of medical records, according to Don Abramson of the Health Care Financing Administration, which administers the Medicare program. From these safeguards, certain minimum physical security standards emerged, along with data and operating security standards. "We had [more than] 100 Medicare contractors try to come up with standards over a period of years," Abramson said.

The minimum safeguards required include an authorization list or person allowed to enter the computer room, tape library and terminal room; locks for all rooms with DP equipment; storage of sensitive data in secure areas during nonworking hours; a low-profile data center; and relocation of CPUs and sensitive data from potential hazard areas,

To service government contracts such as Medicare, the Blue Cross data center is required by the federal government to have certain minimum security provisions.

XYPLEX

such as kitchens and boiler rooms. The ideal location recommended for a data center should be a room with solid construction and windowless floor-to-ceiling walls. In the absence of that, companies should consider bars or alarms on the windows, metal doors, hinges on the inside of doors and access control for all doors, the government recommends.

Anyone entering protected areas of the Federal Reserve Bank of Chicago is required to wear a badge, according to George Coe, vice-president of the bank's Systems Communications Center. Access to tight security areas, such as the data center, is more controlled. Each control area has a sign-in desk, escorts are required for entry and TV monitors watch the entrances. The data center is located away from outside windows through which "someone could easily lob a grenade," Coe said.

All Federal Reserve banks coordinate their security with local police, the Federal Bureau of Investigation and with the military in certain cases. "I don't think there's any question" strong physical security is needed, Coe said. "The critical assets for us to stay in business are largely vested in our computer facilities. We would be totally remiss if we left our vault doors open. Leaving the data center doors open would be tantamount to the same thing."

The Federal Reserve is also developing plans to relocate its facilities in the event of an incident that would "totally disable" the bank. The Disaster Relocation Center site will be the Reserve's most secure facility in Culpeper, Va., Coe said.

SEEDS OF GROWTH

By Paul Gillin

W hen the National Jewish Hospital/National Asthma Center in Denver was evaluating general ledger software two years ago, it settled first on a product from McCormack & Dodge Corp. (M&D). But it ended up installing a general ledger from Cullinet Software, Inc.

For the hospital, which is a Cullinet IDMS user, the choice was obvious. "Once we found out that Cullinet had purchased the M&D product and redesigned it for IDMS, that decided it," said Jim Harbin, director of the hospital's computer resource center. "It would be hard for me to buy anything other than Cullinet now. The one-vendor umbrella is important to me."

National Jewish Hospital/National Asthma Center is one of an increasing number of user organizations that have virtually standardized on software from one or two vendors. "When you get into a big data base environment you really don't want to rock the boat," Harbin said. "With multiple packages it can take days to find out where a problem is. But if I have a problem, now I have one place to go [for help]."

It was not that long ago that the large system software market was rigidly stratified. Some vendors specialized in systems and utilities software, a few offered data base management systems (DBMS), still others specialized in applications packages and others offered productivity aids such as application development tools and data dictionaries.

However, those lines have been erased in the last two years as the software industry has undergone a dramatic, and some say wrenching, restructuring. In the last 18 months the industry's major players have been moving broadly and aggressively into new markets. That development should have users thinking more carefully about their purchasing decisions, experts agree.

The changes have affected virtually every major software firm (see accompanying chart). And the result has been a churn of new product activity that is unprecedented among the independents. "This has been a tremendous year of frenetic product announcements and tremendous management upheaval," said Ann Morley, senior software consultant at International Data Corp., a Framingham, Mass.-based research firm. "The industry has been hyperventilating for the last 18 months."
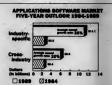
Software market newly saturated

The changes are not necessarily driven solely by the needs of the user. For the first time in its history, the software market is reaching its saturation point. Vendors that have grown happily at 40% to 60% per year in comfortable markets are finding new opportunities scarcer to come by. According to Morley, "These companies are now of the size that the only way to maintain their growth is to move into new markets."

For the data base systems, the focus has been on "total solutions" — providing everything from packaged applications to programmer-oriented development aids. "These vendors will no longer sell just data bases but add-ons in things like office automation, networks and information center tools," said Shaku Atre, president of Atre International Consultants, Inc. in Rye, N.Y. "Satellite products will bring almost 50% of the future revenues for these vendors."

Applications vendors, who lack the data base foundation that is clearly an advantage in the "total solution" concept, are expanding into vertical markets and offering data base-like development tools that let users customize their applications or even create new ones.

In addition, both types of vendors have been active in areas like micro-mainframe links, OA, networks and vertical market applications.

Average sales rising

The effects of this large-scale shift are already being seen in the rapid escalation of average sales figures for the major sellers. "We have gone from an average sale of $50,000 to $75,000 up to an average of $250,000 to $500,000," said Dennis Tablonsky, president of Cincom Systems, Inc., echoing the comments of other vendor representatives.

The trend generally bodes well for users. If a company can buy all of its software from one vendor, it follows that the packages will be better integrated and more easily maintainable. In addition, a user of four or five major packages can often wield greater clout with the vendor. "If I have five products, I expect to get more attentive service than a user who has one product," said Donald Landry, vice-president of the systems division at GC Services Corp., a Houston-based financial services firm.

But there are pitfalls as well. Putting all your data processing eggs into one basket will necessarily tie your DP shop more tightly into one vendor. Such a commitment makes a close study of the available options more imperative than ever before.

National Jewish Hospital's Harbin admitted that his close ties to Cullinet harbor some dangers. "Competition drives prices down and allows

APPLICATIONS SOFTWARE MARKET FIVE-YEAR OUTLOOK 1984-1989

Industry-specific — average annual growth rate 36% — $11.1

Cross-industry — average annual growth rate 20% — $6.5

Dollars (in billions) 0 2 4 6 8 10 12 14

☐ 1989 ▨ 1984

INPUT, INC. CHART

Reliability.

a [user] to negotiate," he said. "We don't have that option."

According to Jack Keen, vice-president and director of client programs at Input, Inc., a consulting and market research firm in Mountain View, Calif., "It's going to be extra important for the user to ask, 'Does this vendor have product expansion plans that are going to serve us for the long term?' "

Keen said the user should be looking at a number of new criteria, including the soundness of the vendor's management team, its R&D budget for strategic areas and its understanding of new markets. "If the vendor is uncertain about where it's going over the next several years, that should raise a warning flag," Keen said.

Users also need to examine their own needs more closely. Keen warned that because the data base vendors are now offering so many add-on products, "A $160,000 decision can easily add up to a $300,000 decision. For DP people it's like being a kid in a candy store," she said. "Each product may only cost $25,000. But they don't realize the costs associated with those products. For one thing, you have to train all those users."

However, the bottom line is that users will have a multitude of new offerings to choose from in coming years. The major new areas of activity blanket virtually the entire market.

Almost everybody in any-abody in the large-systems arena has announced a micro-mainframe link

within the last two years. For some vendors, such as Management Science of America, Inc. (MSA) and Informatics General Corp., the technology has become a critical element to their chances for future success.

As a natural outgrowth of existing product lines, the links offer an almost guaranteed profit for the vendors. But because market pressures have been so intense in this area, the quality and features of the available options vary widely. For users who are leery about committing themselves to a particular vendor, one of the dozens of generic micro-mainframe links may be a better short-term solution.

It is clear, however, that micro-mainframe links are the doorway to the next major stage of data processing evolution — the distributed data base. "We'll see more of a move toward centralizing the data base on the mainframe with smaller versions on the micros and methods to link them together," Atre said.

With integration having recently become more than just a buzzword, vendors are scrambling to offer application development systems and information center software. The intention is to cut the development backlog by letting programmers code smaller applications more quickly and farming out requests for reports and queries to the end users. All the major data base vendors now offer application development aids.

"In the future the DBMS may become only a commodity. Application development, information center

INDEPENDENT SOFTWARE VENDORS

and [QA] tools may become the predominant factors by which people will select information management systems," said Adam Rin, vice-president of product planning and development at Computer Corp. of America, the data base vendor which entered all three of those markets this year.

Robert Goldman, president of Cullinet Software, Inc., added, "Our whole shift as a corporation has been toward addressing end-user requirements on the [micro] and on the mainframe."

More interesting has been the entry of application vendors into the data base-oriented application development market. Within the last 18 months M&D, MSA and Hogan Systems, Inc. have all introduced development aids. Software International Corp. plans to introduce a similar system next year. While those vendors lack the data base underpinnings, they are clearly following the lead of the data base vendors in viewing programmer productivity as a hot area.

The effects will become apparent during 1985, according to Peter Lowber, senior market analyst at the Yankee Group, a Boston-based consulting firm. "I think we're going to finally see replacements for Cobol taken more seriously by DP," he said.

In the software industry, perhaps no novel has been more dramatic in the last two years than the penetration of DBMS and systems software vendors into the packaged applications market.

Among the recent newcomers from the systems side are Cullinet, Cincom Systems and Computer Associates International, Inc. Applied Data Research, Inc. (ADR) has made a more tentative foray into applications through a joint development and marketing agreement with MSA. Software AG of North America, Inc. has agreements with 20 different applications vendors. Computer Corp. of America plans to announce an agreement soon.

The move seems a natural for these vendors. "Data base vendors are sitting in the driver's seat," Lowber said. "They have the foundation stuff as work all the way down to the applications level on the personal computer. Once you have

the data base machinery, you can modify applications easily without having to go through and change every one."

Cullinet has made the most notable thrust into this area. With about 126 financial applications and over 100 manufacturing customers, the company now makes a quarter of its revenue from that market. Cullinet expects that percentage to double by 1987. The company also entered the banking market this year with the purchase of Bob White Software, Inc. and will probably move into the distribution area in 1985, according to Goldman.

Other vendors are setting less ambitious but still substantial goals. Cincom Systems forecasts a 15% to 25% share of revenues from applications in 1985. Computer Associates International expects applications revenues to total about $15 million, or less than 10%, by 1987.

These developments have clearly affected the strategies of the application vendors, although they publicly downplay their significance. "We've always had a ton of competitive pressure on us," said Dennis Vohs, executive vice-president of MSA. "Companies are shifting their emphasis, but the competitive situation is not that different from what it has been."

Life in the fast lane tough for ISVs

The most explosive segment of the software industry sputtered this year, and the largest independent took it on the chin. MSA, which had been the first software vendor to buy into the micro field when it acquired high-flying Peachtree Software, Inc. in 1981, announced in October that it would sell the retail side of that business. MSA said its technology-intensive mainframe strategies were simply incompatible with life in the fast lane of personal computer software.

Arguments aside, Peachtree's difficulties have caused the independents to take another look at the strategic role that micros will play. Most have decided to treat the software as an adjunct to, rather than a cornerstone of, their product lines.

Cullinet and others are instead planning to exploit the advantage of their mainframe experience to get into the market for dedicated workstations. Cincom Systems, for exam-

ple, has plans to release both enduser and programmer workstations, probably based on the IBM Personal Computer AT/370, Yablonsky said.

The programmer workstations would include extracts of Cincom System's Mantis and T25 data base software. The user workstations would center around Cincom System's Series One Plus integrated software with programmed access to the Manage series of decision support software on the mainframe.

Opportunities created by growth

The market for general-purpose financial software is shrinking, but a new opening has appeared for applications geared to specific industries.

Over the next five years, Input is predicting a 36% annual growth rate for industry-specific applications, compared with 20% for cross-industry solutions. "There is an enormous restructuring going on in industries like discrete manufacturing, banking and finance, medicine and transportation as a result of deregulation and foreign competition," Keen said. "All this turmoil is creating opportunities."

The meteoric rise of vendors like Hogan (banking) and Shared Medical Systems, Inc. (medical) in industry-specific applications has not escaped the attention of the major independents. MSA, for example, has announced products or plans in the areas of purchasing, manufacturing and distribution. Cullinet already offers manufacturing software and acquired its way into banking this year. M&D is working on versions of

its financial software for specific markets.

Perhaps the most interesting new approach has been that of International General Corp. Information, which had admittedly overextended itself into nearly every segment of the software market for the last several years, reorganized this year. It divested itself of several businesses, including time-sharing, and threw itself into vertical markets.

"We are not trying to be all things to all people but rather all things to some people," said Ron Freeman, corporate vice-president of marketing. "We are going in on corporate verticals, targeting individual companies and treating them as industries. "The company has set up separate divisions for applications and systems products and is targeting its efforts toward about 100 large companies. Freeman said. It is taking a departmental approach, looking to sell accounting software to the accounting departments, law office applications to the corporate legal department and data base tools and micro-mainframe links to data processing.

"It's a very different business, and some companies grossly underestimate the difficulties of entering it," Keen said. "The people developing this software must have a good knowledge of the industry. Technical software people don't necessarily know how to deal with people on the user side. And applications software users require much more support from the vendor in terms of installation and training."

Value of broad product line increases in purchasing

The breadth of a vendor's product line is becoming an increasingly important factor in software purchasing decisions, according to recent interviews with users. However, product functionality, vendor reputation and performance still top the list of considerations when purchasing software.

Although most users said their initial purchasing decisions would not hinge on other products offered by a vendor, they admitted that the issue can become more important the second time around.

"It's like politics. The incumbent is hard to replace," said Arnold Drouillard, manager of membership administration at Blue Cross/Blue Shield of Michigan in Detroit. "If I'm looking for a new package I'm going to go to the data center first and look at what [vendor] we've got already. I would say those vendors get an inside track."

Dick Lund, assistant vice-president of systems and programming at Wausau Insurance Companies in Wausau, Wis., said, "I think there will be a tremendous amount of fallout [in the industry] in the next few years. I would like to see us hooking up with one of the vendors who is going to survive."

Full product line valuable

Nevertheless, Lund placed breadth of product line "fourth or fifth on the decision tree" behind financial stability of the vendor, ability to interface to existing software and fit between the product and the business need.

Most users agreed that the importance of a seller's other offerings depends on the product they need. "If we were buying a financial package it would probably have an effect if one vendor had a set of related software," maintained Bobby Stewart, data processing manager for the city of Greensboro, N.C.

Drouillard added, "If I

was looking for accounts receivable, I would be inclined to [take] a closer look [at] the company with a full product line."

Reformatting easier

However, one user dismissed the issue. "Years ago, interfacing [one product to another] used to be a problem. But because of coding flexibility today, it's just a matter of manipulating file formats to pass data," said Glenn Lukowics, director of computer services at St. Luke's Hospital in New Bedford, Mass.

Lukowics said the necessary reformatting programs should take a programmer no more than four hours to write.

St. Luke's is in the process of selecting Computer Associates International, Inc.'s (CAI) general ledger software over a general ledger package from Management Science America, Inc. (MSA).

According to Lukowics, the CAI general ledger is a real-time package with good features and a much lower price than the MSA soft-

ware. Even though the hospital already has two MSA software packages and does not have any other applications from CAI, Lukowics said, "We have no worries about interfacing with MSA's payroll. We have already written mock interface programs to all of our homegrown applications in less than three hours."

How to be in 16 places

Emerging mainframe software areas merit attention

Most observers agree that the frantic pace of new activity in the mainframe software market cannot continue much longer. Rather, 1986 will be a year of consolidation. There are, however, specific areas that bear closer watching. Based on interviews with vendors and market watchers, here are some of the currently emerging technologies.

Distributed data base management, a buzzword that is several years old, is moving closer to reality. Data base vendors who have spent 1984 trying to attach micros to mainframes will turn more attention to designing data bases that can take advantage of the link.

Distributed data base promises to be the next major evolutionary step in data processing, many analysts agree. But it presents a whole host of potential problems in areas like backup and recovery, security and concurrent access. Data base management system (DBMS) users should be carefully monitoring their vendors' activities in the previously mentioned areas and preparing for the necessary major organizational change.

In line with that, networks appear to be a hot new area of interest. Both Cincom Systems, Inc. and Computer Corp. of America entered the network arena this year. Cullinet Software,

Inc., while it has not announced a networking product, has signed agreements with Digital Equipment Corp., Data General Corp. and Wang Laboratories, Inc. to provide access to Cullinet's Information Database from those machines. While the three software vendors are taking very different approaches to networking, the common thread is finding new ways to deliver computing power to the departmental user. The past year has also seen much activity in office automation networks. Products will become available in 1985 which will effectively allow diverse OA systems to exchange documents.

Application development aids for both programmers and users have been very successful this year. With the emergence of good IBM Vsam interfaces, it is no longer necessary to have a DBMS to use them. Complaints about performance are beginning to melt as these tools consistently demonstrate two- to ten-fold productivity improvements over Cobol. Many DP shops are beginning to standardize on them for everything but the largest projects.

Links enhanced in '85

Micro-mainframe links, although barely two years old, improved by leaps and bounds in 1984. Although actual sales have yet to match the products' publicity, it appears that the links will come into widespread use in 1985. The mainframe software vendors will stress tighter connections to their own micro software, while the independent link sellers will enhance ease-of-use and performance features. Vendors have also indicated they will try to offer an alternative to expensive coaxial cabling to achieve the hookup.

One of the newer developments is the concept of tying micros into departmental minicomputers with the mainframe serving as a data base management machine. Most experts agree that existing links will soon overburden the host if it continues to bear the brunt of the extract and reformatting burden.

SMALL CHANGE

By Eric Bender

As supply finally caught up with demand in 1984, bloody price wars hit the microcomputer arena. Many suppliers went belly-up, and CPU prices plummeted 35% or more. But although this colorful spectacle drew widespread attention, it produced only limited benefits for corporate personal computing budgets, vendors, users and consultants agreed.

In the past year, the cost of "the so-called typical configuration, if anything, has gone up," said Henry Kee, vice-president for personal computing at Chemical Bank.

And while what you get for your money in microcomputers continues to improve dramatically, few analysts expect overall expenditures per user to drop in 1985. Among the reasons:

- Companies are moving to standardize more powerful hardware with greater storage capacity.
- Prices for leading micro software packages are holding relatively steady.
- Corporate moves to give users better communications links and enhanced output devices will tend to keep spending level.

Beyond that, the high costs involved in full support are only now becoming clear in many companies and are not expected to diminish significantly. "If everyone takes a look at what service and support costs, compared to computers, there will be no willing buyers," one dealer commented.

Total costs of installing and fully supporting a personal computer within a corporation range upward from $6,000, depending on frills, analysts estimated.

By the time you add up all the pieces, each desktop machine in a Fortune 1,000 company carries an $8,000 price tag, said Cyril Yansouni, vice-president of Hewlett-Packard Co.'s personal computer group in Cupertino, Calif. Component prices keep sliding, "but what people spend isn't dropping," he said.

System prices generally "have been reduced about 10% to 11% annually in the U.S.," noted Chris Christiansen, senior analyst at the Yankee Group in Cambridge, Mass. But he pointed out that despite major cuts by IBM and other suppliers, "only certain products are being discounted heavily and a lot of high-end machines are coming into the market."

Christiansen placed annual costs of a networked personal computer with micro-to-

JOHN GRESS

mainframe last (depreciated over three years and omitting support expenditures) at slightly over $10,000, and predicted that "the cost to put a machine on a desk will remain about the same."

Generally, in volume purchases, hardware discounts range around 20% and software discounts may run well over 50%, users said.

In 1984, list prices often had only a casual acquaintance with actual prices, as competition increased and many suppliers scrapped to make a deal.

Hardware

IBM last June finally slashed prices on its Personal Computer line, with system price tags dropping by

While what you get for your money in microcomputers continues to improve dramatically, few expect overall expenditures per user to drop in 1985.

up to 23%. As one example, a Personal Computer with 256K bytes of random-access memory and dual floppy drives (but no monitor) was repriced from $2,908 to $2,420.

In August, aggressive pricing for the new Personal Computer AT pressured costs further, and in the fall, a Big Blue promotional campaign cut prices once again. At the low end, prices were further weakened by a nationwide street fight between IBM's PCjr and Apple Computer, Inc.'s Apple IIe and Apple IIc computers. Some retailers were offering a 256K-byte, dual-floppy Personal Computer with monitor at below $2,000.

Beginning in the summer, Personal Computer-compatible manufacturers dropped prices to follow IBM, and others outside the compatible camp followed as well. Even Digital Equipment Corp. eventually followed suit, although the pricing for the Rainbow series remains high by industry standards.

Apple's Macintosh, the hottest personal computer introduction of the year, also saw a price cut in September, from $2,495 to $2,195. Retail prices since have reached as low as $1,500.

So what's ahead in 1985? "We'll see a fire sale," forecast George Colony, president of Forrester Research in Cambridge, Mass. Colony expected a basic IBM Personal Computer to cost around $1,500 early this year, with the IBM Personal

Computer XT priced in the $3,000 range.

Once again the crystal ball is clouded by the rumored introduction of a new IBM machine — this one positioned between the basic Personal Computer and the AT. The most popular rumors dwell on the launch of an Intel Corp. 80186-based "Personal Computer 2" with a $2,000 price tag sometime before spring.

Some DP executives also predict significant purchases

of laptop micros. "The full-function laptop unit will change the culture of how we do things," Kee predicted. To date, full-function laptops have carried a premium price tag — for example, costs of the Data General Corp. Data General/One begin at $2,895.

Software

Leading micro software applications such as Lotus Development Corp.'s 1-2-3 generally are maintaining

their prices, although the real prices often are considerably below list. Less popular software often is priced far, far below.

"We're seeing the market begin to break into segments," said Andrew Langlois, assistant controller and former corporate MIS director at Moore McCormack Resources, Inc. in Stamford, Conn.

"Anyone in the Fortune 1,000 getting a high-end product with a high amount

of productivity is not afraid to buy the functionality, because the company's going to get its value out of the software," Langlois said. But in smaller firms, "there's a lot of pressure from people who want to buy in the $75 to $150 range and know that it will be pretty decent."

Colony said that "the lead products can hold their prices," but once outside the handful of leading vendors, "the drop-off is very substantial."

General DataComm beats Hayes for accuracy.

MICRO PRICING

35

As in hardware, many vendors seek to hold the line by offering upgraded products. In October, Micropro International Corp. finally dropped the price of Wordstar from $495 to $350 but soon followed by introducing Wordstar 2000 at $495.

However, list prices are even weaker in software than in hardware. "Suppliers will continue to maintain artificially high list prices," Christiansen said. "You can buy Lotus' [1-2-3, normally

$495] for $300 and [Lotus' Symphony, listed at $695] for $400, if you're willing to go mail order. There's no reason to pay full price for software."

More software packages?

Chemical Bank's Kee commented that "software prices are down substantially — however, we're getting more software packages."

In addition to more applications, this year many firms expect to begin to buy micro-

computer operating environments such as IBM's Topview.

While micro software typically is licensed on a single user, single machine basis, Christiansen and others are considering pressure on this policy from large corporations.

Other forms of licensing

Users may want to sign a license for companywide operations or buy one package to run on both a desktop ma-

chine and laptop or deliver programs from a departmental computer such as the IBM System/36 or from a local-area network server.

There are signs that large software vendors are moving to address these concerns. Micropro, for example, is signing corporate licensing agreements, and Ashton-Tate has established networking pricing. But new policies need heavyweight backing, Christiansen suggested.

"IBM will have to step in to decide how to price and support and protect software across a network," he said.

Peripherals

To no one's surprise, microcomputer storage prices continue to slide as manufacturing volumes increase and technology improves. As one example, add-on 10M-byte hard disk drives now can be purchased for well below $1,000.

Colony predicted "a complete collapse in disk drive prices, mainly pushed by the 20M-byte drive" in IBM's Personal Computer AT. The move toward high-density microfloppy drives also should improve price/performance.

But users are likely to purchase greater capacity and end up spending at least

Some DP executives predicted significant purchases of laptops. 'The full-function laptop unit will change the culture of how we do things.'

— Henry Kee, vice-president, personal computing, Chemical Bank.

as much as in earlier years.

Printer, plotter prices

Printer and plotter costs also dropped in 1984 as a huge array of products made its debut.

"Printer technology is moving very fast," Langlois noted. "There's a very sharp rise in what you can get for a given price."

However, once again these savings are being offset by turns toward increased performance, particularly in devices supporting enhanced graphics. Many firms are undecided on the overall budget impact of new types of high-end products, such as HP's $3,495 desktop Laserjet printer.

Communications

"The user is no longer satisfied with local processing; he wants corporate data," Kee said.

This crucial shift in changing the entire environment for personal computers in business, with strong impact on communications costs, both for installation and ongoing use.

Budgets vary widely, as each company develops its own system.

Modem costs

In basic asynchronous communications, modem prices continue to fall, with 300 bit/sec hardware/software packages selling for lit-

1983 REVENUE BY QUARTER
($MILLIONS)

PRODUCT
- XP1
- XP2
- XP3
- XP4
- XP5
- XP6

November 12, 1984

Mr. Phillip Wallace
Bowitt Construction Company
60 East 42nd Street
Suite 2530
New York, New York 10165

Dear Mr. Wallace:

Per our conversation of Friday, November 9, I would like to take this opportunity to tell you in more detail about the Xerox line of Diablo Daisywheel Printers you inquired about.

Let me begin by saying the daisywheel delivers "letter quality" output, that is, the print quality is indistinguishable to that of a typewriter. And you can have that quality in over 200 drop-in typestyles from legal to engineering to daisywheel.

With a range of 20 to 60 characters per second, or roughly 1 to 5 pages per minute, it's perfect for general office applications.

You mentioned that your company has several computers. The Xerox line of Diablo Daisywheel Printers was developed specifically to support office environments such as yours and are ideally suited to provide the print quality you require. And they're tough, durable and reliable.

... me, the user should experience very little down ... variety of accessories like automative

tle over $100 at retail and 1,200 bit/sec packages available for as little as $400, vendors said.

A wave of 2,400 bit/sec modems targeted at personal computers hit the market this fall, priced at $800 and up.

Local-area network connection prices also are moving down.

Card costs now run from $500 to $800 and will move toward the $300 to $700 range this year, said Joseph Hughes, marketing vice-president at Corvus Systems, Inc. in San Jose, Calif.

From $500 to $300

Colony predicted that the

> *A large internal user group may solve many support problems. If you call Lotus Development Corp. with a question about 1-2-3, 'you can sit in a queue for 30 minutes and give up. . . . Within our home office, almost all use is 1-2-3-based,' and hotshot users can answer most questions.*
>
> —Steve Keese, John Hancock Mutual Life Insurance Co., Boston.

IBM PC Network's $695 hardware connection price "will erode fairly quickly to $500."

However, others cautioned that hardware connection represents a relatively small slice of total network costs.

Moves toward increased storage capacities and additional software services may boost the net bills.

Support and training

With the early struggles to establish microcomputer acquisition and support policies behind them, many corporations are now getting a better grip on support requirements.

"But if you ask around, you get a variety of answers, none of which I'm comfortable with," the Yankee Group's Christiansen said. "For one thing, everyone does training differently."

Although both hardware and software products are becoming easier to use and reasonably helpful on-disk tutorials are appearing in increasing numbers, consider-able training and hand-holding are still needed.

Training costs range from nothing (unpaid overtime) to

more than $1,000 per trainee for external courses, users said.

In many organizations, support requirements are growing so large "that the cost per computer is no longer as it would seem," said Ralph Wagner, president of Microsource Financial, a Boston-based reseller to large companies.

Wagner pointed out that if a company that buys 100 personal computers then "opens up a support depart-

ment with five people, that's at least $150,000 per year, and those computers are no longer economical."

Solution to support problems

On the other hand, the emergence of a large internal user group may solve many of the support problems that have crippled personal computers since birth.

If you call Lotus with a question about its 1-2-3 package, "you can sit in a queue for 30 minutes and

give up," said Steve Keese, senior coordinator for office automation at John Hancock Mutual Life Insurance Co. in Boston.

But "within our home office, almost all use is 1-2-3 based," and hotshot users can answer most questions, Keese noted.

Overall maintenance charges

Overall hardware maintenance charges seem relatively limited, and handling repairs on a time-and-materi-

als basis rather than a service contract saves money, according to DP managers.

"In a population of about 70 [personal computers], we have spent about $2,000 in the past year," Langlois said.

"A maintenance contract on those machines would have been about $16,000," he added.

Major vendors typically charge 12% to 15% of list price for an annual service contract, he said.

HOW MUCH IS ENOUGH?

By Tom Henkel

Long considered a mixture of scientific evaluation, old-fashioned horse sense and a little black magic, the task of capacity planning is on the brink of a major upheaval.

The skyrocketing demand for corporatewide processing power is threatening to upset the delicate balance that, in the past, has allowed DP executives to remain one step ahead of users' demands. As a result, many DP executives will be forced to alter significantly their approach — and dedication — to capacity planning.

The most troublesome issue facing capacity planning experts is how to accommodate the growing number of microcomputer and intelligent terminal users who want access to information stored in corporate mainframes.

Because few companies currently offer large numbers of micro users access to mainframe data, most capacity planning researchers agree that no one really knows what kinds of problems will crop up as DP operations

become more complex. Clearly, as more users are given interactive access to mainframe-stored data, there will be a heavier strain on the system, its networking facilities and its software. But how devastating that impact will be remains largely theoretical.

The essence of any DP executive's job is to keep the company's computer system running and provide the resources to allow other departments to function smoothly. But to continue providing those services, many researchers now contend, the DP executive must look beyond the hardware in a raised-floor computer room and evaluate how microcomputers, controllers and networks will affect the overall corporate data resource.

For example, take the hypothetical case of a series of terminals in Dallas connected to a Boston-based IBM 3080 series mainframe via 4,800 bit/sec modems. The terminals are routed through Chicago, using IBM's

Systems Network Architecture. According to a simulation package developed by BGS Systems, Inc. in Waltham, Mass., the addition of two microcomputers to the Dallas operation, each demanding large amounts of data (about 1K byte) from the Boston-based host, would increase the network response time from roughly five seconds to over 30 seconds.

While noting that the hypothetical example is not as accurate as working with an actual system configuration, Robert P. Goldberg, BGS' senior vice-president of technology, said the case is typical of the performance degradation that may occur when several micro users are linked to a host processor.

Goldberg claimed that many DP executives would face a nightmare if even a handful of microcomputer users was to request significant amounts of data from a host processor at the same time. For example, Goldberg said, it could take anywhere from 30 to 45 minutes to download 1M byte of data to a microcomputer.

A solution

To solve the problem, Goldberg said, the DP executive can take several courses of action, such as upgrading modems to accommodate a higher transmission speed or upgrading communications controllers or the host processor.

To evaluate those options, modeling packages, such as those developed by BGS, Candle Corp. in Los Angeles, Morino Associates, Inc. in Vienna, Va., and Boole & Babbage, Inc. in Sunnyvale, Calif., will become essential tools to capacity planners, Goldberg contended.

While Goldberg may display an understandable bias to modeling software, independent researchers seem to agree that modeling packages will become as essential to the capacity planner as spreadsheet programs have become to financial planners.

James Sprung, a group leader with Mitre Corp., an independent research organization in McLean, Va., said that the use of more effective methods to capture and evaluate computer performance data is an important part of capacity planning. But Sprung quickly added that good software packages are only part of the solution. The DP executive must also develop a keen understanding of the types of computer services that end-user departments really need and provide the technical assistance to help nontechnical users to use the system efficiently.

Noting that communications with end users has not been a traditional strong point for DP executives,

Sprung said the onslaught of information-hungry end users may cause many DP executives to become very possessive of mainframe computer resources. The unfortunate result may be a DP department that develops services to suit the personal interests of the DP executive, while projects that would be more productive to the company as a whole are neglected.

Better communications with end users may also be a

saving grace for DP executives charged with keeping an entire corporation's data resources operating smoothly. By explaining potential problems to users, the DP department can avert some problems before they happen, noted Shelly Weinberg, a senior staff member at IBM's Information Systems Management Institute in Los Angeles, an organization that operates classes geared toward aiding DP executives and other corporate managers to manage computer resources better.

BGS' Goldberg noted that if the microcomputer users in the hypothetical networking problem gave the DP department advance notice that they each needed 1M byte of data from the host, the response time degradation could probably be avoided. Goldberg suggested that it may be wise for corporations to set down a series of rules governing end-user host access.

But too many rules can drive users away from a system, noted John Murray, director of management information services for Rayovac Corp. in Madison, Wis. Murray contended that the DP department must be ready to accommodate the users' needs while at the same time trying to educate and teach to use the system correctly.

Rayovac currently employs one full-time person to perform the capacity planning function and two others

UNIX SYSTEM V. FROM AT&T. ON TOP

to man as an information center. With six corporate microcomputers having access to the company's IBM mainframe, Rayovac until fairly recently evaluated only mainframe-generated reports to perform capacity planning, Murray said. Now, through an information center, DP department representatives are beginning to work with end users.

Small and medium-size companies can sometimes take a personal approach to training that is impractical in large corporations. Pittsburgh's Mellon Bank, ranked the 12th largest in the country, is now experimenting with a project to limit the number of people with direct access to the firm's IBM mainframes (two 3081s, a 3083 and a 3083-U) to conserve processor resources.

The experiment is being done through what capacity planner Ed Williams called "near-micros" — dumb terminals with the inbred ability to run microcomputer programs, such as spreadsheets. The near-micros, he said, have the ability to perform operations with mainframe data but do not have the ability to access that information directly. Information for use on the near-micros is requested by a microcomputer, typically located in a department manager's office. The mainframe data is loaded into the micro then funneled to the near-micros.

To augment the project,

Williams said, Mellon Bank has developed an internal users group to allow users to share experiences. The group also serves as a vehicle to disseminate information about the system.

But Williams admitted that a larger capacity planning issue may be looming on Mellon Bank's horizon. In addition to providing internal DP services, Mellon also sells computer services to approximately 300 other banks. Currently, very few of the

client banks have the ability to download Mellon data into intelligent terminals and microcomputers. But Williams believes it will only be a matter of time until more financial organizations demand the capability.

Noting that it may be much easier to get Mellon employees to cooperate with rules for operating the system than paying customers in outside organizations, Williams is concerned that contention for mainframe data could become a problem in the future. "The only thing that saves you is probability," Williams said, adding that the chances of a large percentage of the user base requesting mainframe data at exactly the same time is somewhat remote.

Currently gearing up its capacity planning effort to manage system resources better and handily accommodate approximately 15 IBM Personal Computers is Peter, Howell & Heather, Inc. in Baltimore. According to senior business analyst Ryan Souther, the company is currently developing protocols to connect the IBM mirror to the company's Honeywell, Inc. DPS 8/70 mainframe.

"Right now ignorance is bliss," Souther said, noting "that he has been working for the past six months with Honeywell's Some performance monitoring package to compile weekly and long-term performance reports and performing regression analysis on the results. Souther admitted, however, that he has not performed any simulations to evaluate what impact the micros may have on the system.

The influence of systems and users outside the computer room currently seems to be having an impact only on a few companies. According to Phil Howard, editor and publisher of "EDP Performance Review," a newsletter published in Phoenix, only a few of the top Fortune 500 companies are trying to find new ways to do capacity planning accurately.

IBM's Weinberg said more than three-fourths of the users who attend the Information Systems Management Institute came from MVS shops. But Weinberg added that the attendees seem to be split between big 80 series IBM mainframes and smaller 30 series machines.

"We're one to two years away from understanding this well enough," Weinberg said, adding that it will take at least that long before companies start connecting micros and intelligent terminals to host processors in significant enough numbers for researchers to develop any concrete solutions to the capacity planning issues. Until then, Weinberg admitted, there will be a great deal of uncertainty surrounding accurate capacity planning.

SYSTEM V

...OF THE BOTTOM LINE

AT&T

Capacity planning key in growing role of DP execs

By Tom Henkel
CW Staff

The increasing demands for accurate capacity planning are tightly bundled into a changing role for DP executives in many corporations.

The demands of information-hungry users coupled with the financial benefits companies can reap with a finely tuned computer system has put the DP executive into a highly visible position.

Traditionally viewed as a poor performer when it comes to meeting deadlines, making accurate predictions and dealing with end users, most researchers agree the DP executive who fails to shape up under the corporate spotlight may find himself

cast off into the darkness.

There is little disagreement among industry observers that the need of data processing will eventually wield as much power as the chief financial officer in many corporations. In some large companies, the head of DP is already considered a vital resource when making future corporate plans. In others, the DP chief is still excluded from key corporate decisions.

Compatibility a vital issue

For example, H. Alfred Colby, senior vice-president of information services at John Hancock Mutual Life Insurance Co. in Boston, recently noted that he is often called upon

to analyze the viability of the DP center of a small company John Hancock is planning to acquire. Colby added that a few years ago, upper management did not give much consideration to whether the data center of a potential acquisition would fit in with John Hancock's existing configuration. Now, Colby said, management views that compatibility as a vital issue.

The capacity-planning issue appears to be one of the first significant challenges along the DP executive's path to increased power.

"Running out of capacity is the most severe problem an MIS department can have," noted John Murray, director of management information

services for Rayovac Corp. in Madison, Wis.

Capacity planning an issue of control

Murray contends that effective capacity planning boils down to an issue of control. If the DP executive can manage to keep the corporate DP facility running on an even keel, he will undoubtedly be viewed as a dependable and vital member of the top management team. But if the DP executive fails, he may find himself being shunned by an upper management that feels that inviting the DP executive to help out with top-level decisions will only confuse the issue with technical jargon.

A poor job of capacity planning may also have lasting negative effects on the DP executive's career, as well as on top management's view of the DP department as a whole, noted Shelby Weinberg, a senior staff member of IBM's Information Management Institute in Los Angeles.

Weinberg noted that it takes a while to rebuild top managers' confidence in a DP executive's decision-making capabilities after a botched capacity-management decision leads to an unacceptable response time or undeliverable services.

To counter that possibility, Weinberg recommends the DP executive take several steps:

■ Get top management involved in making key DP decisions. Rayovac's Murray agreed with the suggestion, but noted that many top executives are still quite intimidated by technology. Murray suggested the DP executive should get top executives involved without overburdening them with technical details.

■ Focus on doing small tasks well. Weinberg suggested that DP executives who are just developing a capacity-management plan can often enjoy greater success by focusing on small tasks as opposed to embarking on a program that is overly ambitious.

■ Capacity-management projects that are undertaken should be well measured and analyzed so that trends can be gleaned for future projects.

■ Take steps to isolate the most rapidly changing aspects of a system from its vital bread-and-butter segments. "The world is changing so fast you are sometimes unable to make accurate predictions," Weinberg explained.

For example, he noted that a system used to support an information center should not, if possible, be used to support applications fundamental to the smooth operation of the business.

There do not appear to be any general rules governing how much manpower a company should devote to capacity planning.

Most users contacted had at least one full-time employee devoted to capacity planning. Most were also quick to point out that the scope of the operation can have a strong influence on the number of people needed.

Most experts note that even a part-time capacity planner is, in the long run, better than no planner at all. Most also contend that the use of commercially available capacity management tools make the capacity management job much easier.

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DIGITAL BRINGS VAX TO LARGE SCALE COMPUTING.

TIME TO GET MOVING

By Mitch Betts

> "I personally believe that representative government is alive and well and functioning the way it was intended to function — not very well. I really believe that our whole system of diffusion of powers was designed to build some impasse in the government and to make it difficult for the government to accumulate the necessary power to make major decisions.
> "We are really a crisis-activated institution. And that . . . means we don't do anything unless there's a consensus out there that unless we do something, something very bad is going to happen. And that means

we're almost inevitably behind the curve."
— retiring U.S. Rep. Barber B. Conable Jr. (R-N.Y.), quoted in Congressional Quarterly.

Consider, for a moment, the following recent events:

■ Congress worked six years to produce a computer crime law that, in the end, was limited to breaches of the federal government's own computers. The provision was attached — in violation of House rules — to a catchall budget bill that was overdue. The Senate had never voted on the merits of the bill, never held hearings on it, and it is likely

NANCY McMILLAN

Congress to address array of computer issues in '85

A look at Congress' agenda for 1985 illustrates the broad range of computer-related policy issues that already have been identified by members of Congress and industry lobbyists:

■ The House and Senate Judiciary committees are expected to revisit the federal policy toward computer crime. After approving legislation in 1984 that outlaws unauthorized access to federal computers, the committees will hold hearings to study the expansion of that law to cover computers used in interstate commerce.

■ U.S. Sen. Patrick J. Leahy (D-Vt.) wants to amend current wiretap law to make it illegal to intercept data communications without a warrant. U.S. Rep. Ron Wyden (D-W.Va.) wants to make it illegal to gain unauthorized access to computerized medical records.

■ The House Subcommittee on Transportation, Aviation and Materials, chaired by U.S. Rep. Dan Glick-

with the Reagan Administration Act to determine which branch of the government will control exports of electronic equipment to Soviet bloc countries.

■ The House Subcommittee on Health and Safety is expected to monitor the issue of health hazards from VDTs, including the study under way by the National Institute for Occupational Safety and Health.

To its credit, Congress is aware of the challenge it faces in monitoring and legislating on these and other issues, and reforms are being discussed. U.S. Sen. Dan Quayle (R-Ind.), for example, is leading the charge for reform of the Senate's

man (D-Kan.), will monitor security procedures used for the federal government's computers.

■ Several legislators and trade associations will push for curbs on illegal software copying.

■ The computer industry will try to retain and obtain favorable tax benefits at the same time Congress tries to reduce the federal budget deficit, simplify the tax code and remove tax loopholes. Computer dealers and lessors want three-year, accelerated depreciation for computer equipment, and the electronics industry wants a 25% research tax credit and no change in the tax code's preferential treatment of long-term capital gains.

■ President Reagan's Commission on Industrial Competitiveness will push for Congress to create a Cabinet-level Department of Science and Technology.

■ The House Ways and Means Committee plans to hold oversight hearings about the Internal Revenue Service, including the IRS' extensive automation plans.

■ The House Subcommittee on Government Information, Justice and Agriculture, chaired by U.S. Rep. Glenn English (D-Okla.), will monitor the electronic filing systems of the U.S. Securities and Exchange Commission, the U.S. Patent and Trademark Office and other federal agencies.

committee system.

"We are spread too thin. We serve on too many committees and subcommittees," Quayle said in October. "It is not humanly possible to give proper attention to the 13, 15 or 17 committees and subcommittees that some of us serve on. ... We do not have time to become experts in the areas we are most interested in."

Quayle's reforms would limit the number of panels on which a senator can serve and would encourage the use of a computerized scheduling system for committee meetings.

Also in the mood for reform is the House Science and Technology Committee, chaired by U.S. Rep. Don Fu-

Patrick J. Leahy

Dan Quayle

Clearinghouse helps keep Congress focused on future

At the Congressional Clearinghouse on the Future, the mission is to help legislators look beyond their next election campaign by holding seminars and publishing reports that bring the thoughts of top Futurists to the attention of legislators and their staffs.

Clearinghouse Director Lena Lupica said "We're definitely making headway," but admitted it is particularly difficult to overcome the "two-year mentality" of House members. "The first year they work on the budget, and the second year they're running for office. I think . . . considering the pressures that are on them."

But Lupica said the very existence of the clearinghouse — which, she noted, is funded out of Congress' office budget — shows that Congress recognizes the need to deal with America's high-tech future. "A lot of members of Congress are interested in these issues and are trying to learn all they can," she said.

Tons of questions'

Also optimistic is William R. Moroney, president of the Electronic Funds Transfer Association (EFTA), who said that many legislators and staff members are conversant about high-tech issues and are very eager to learn. "The experience level, as far as technology goes, seems to be improving in Congress," he said. "They ask tons of questions."

Likewise, Vice D. Henriques, president of the Computer and Business Equipment Manufacturers Association, commented, "I am more encouraged than discouraged about Congress." He filed the 1964 enactment of legislation encouraging joint research ventures as a sign that Con-

it makes a big mistake. Congress should be in the business of setting goals," said the EFTA's Moroney. "Congress seems to be headed in that direction, and I think that's good."

The solution, according to U.S. Rep. Lee R. Hamilton (D-Ind.), is for Congress to "forge a better relationship with the scientific and engineering communities" and rely on the U.S. Office of Technology Assessment and other support groups to provide technical guidance for policy-making.

Therese Sheehy, manager of governmental affairs for the Data Processing Management Association (DPMA), said that an overworked Congress will increasingly need to rely on congressional support groups, think tanks, industry coalitions and blue-ribbon panels to cope with its high-tech agenda. The DPMA's computer crime committee is now drafting model legislation for consideration by federal and state lawmakers, she said.

In the computer crime area, experts have long supported the idea of creating a blue-ribbon commission to develop strategies for combating computer abuse. For example, in 1964 Rep. Dan Glickman's (D-Kan.) subcommittee recommended formation of a national commission on computer security and privacy on the grounds that "the breadth and multijurisdictional character of these issues prevent any single agency or congressional committee from dealing comprehensively with them."

According to another leading proponent of the commission idea, Robert F. Campbell, president of Advanced Information Management, Inc. of Woodbridge, Va., "It's time for Congress to catch up and legislatively stimulate a solution to the computer crime problem." Whatever the reforms, the computer community hopes it never sees another congressional session like last October's, when the computer crime bill was silced up and glued to a budget resolution just before adjournment.

"I would hope we don't see a sharp turn toward that method," the DPMA's Sheehy said. "I'd like to see a more ponderous approach, considering the far-reaching effects of national legislation."

gress is beginning to understand the high-tech marketplace.

But the question remains whether the well-intentioned Congress can keep up with the rapid pace of technological change in the computer age without some changes. The consensus of the political analysts seems to be that Congress should strive to set broad goals on high-tech policy issues and then turn to outside technical advisors for help with the details.

"When Congress tries to legislate specific types of technology, I think

Glickman

High-tech issues looming large on House agenda

In 1985, the Congressional Clearinghouse on the Future surveyed the committee staff members of the U.S. House of Representatives to find out what future issues they thought warranted congressional attention. The result was a publication called *The Future Agenda*.

The following computer-related issues were identified:

■ **Armed Services**: Electronic weaponry raises questions about reliance on electronics vs. reliance on human judgment.

■ **Banking, Finance and Urban Affairs**: Electronic funds transfer

raises concerns about computer crime and privacy and the applicability of federal banking laws.

■ **Education and Labor**: This committee will monitor the use of computers and telecommunications for education; educating and re-training the labor force for the service-oriented economy; and the effects of office automation on productivity, morale and employment.

■ **Energy and Commerce**: Emerging issues of industrial robots include displacement of laborers and declining employee morale.

■ **Foreign Affairs**: Transborder data flow issues should be the subject of debate, including the effect that data barriers have on multinational corporations.

■ **House Administration**: This committee will monitor the use of computers by Congress and explore the use of teleconferencing for hearing testimony.

■ **Judiciary**: The committee plans to study computer privacy issues, the applicability of the First Amendment to electronic media, the use of computers in the courthouse and computer crime.

■ **Public Works and Transportation**: Electronic funds transfers, electronic mail, teleconferencing and personal computers may reduce the demand for traditional transportation services.

■ **Science and Technology**: The committee will explore the roles that patent law, federal research funds, tax incentives and other government policies play in high-technology innovation.

■ **Ways and Means**: The committee said it will investigate unfair trading practices in the international computer chip market.

that only a few senators read the bill before it became federal law.

■ For the last four years, Congress has failed to pass an authorization bill for the National Science Foundation because of jurisdictional squabbles between the Senate Committee on Commerce, Science and Transportation and the Committee on Labor and Human Resources.

■ The House panel that has taken a lead role in studying computer security is the House Subcommittee on Transportation, Aviation and Materials, which seemingly has little jurisdiction over computers.

No doubt the U.S. Congress is a brave experiment in representative democracy. But it also is an institution that is facing an identity crisis brought on by paralyzing rules and procedures, proliferating commit-

tees, a heavy work load consisting of trivial duties rather than statesmanship and, more generally, the rapid pace of contemporary American life, according to several congressional observers.

"With too much work and too few resources, Congress will have to ignore many issues that need addressing," wrote William L. Renfro in the December issue of The Futurist. Renfro, a former congressional aide and now president of Washington, D.C.-based Policy Analysis Co., presented a gloomy assessment of Congress that concluded: "Thus, at a time when the country more than ever needs clear decisions on the complex questions of the next decade, Congress is increasingly unable to meet its responsibilities and is losing its strong central role as a decision-making body representing the people."

"Keeping up with technological change has become a formidable challenge for Congress," observed U.S. Rep. Lee H. Hamilton (D-Ind.) in mid-1984. "The job of keeping up is most difficult because members of Congress, most of whom have little technical background, are being asked not only to understand the workings of computers, satellites and the like, but also to make decisions on the regulation of these devices."

Hamilton noted that some laws written just four years ago are already outdated. In many cases," he said, "information technology simply leapfrogs over these laws and renders them ineffective or irrelevant. Problems of copyright law, computer crime, national security and personal privacy have jumped to the top of the nation's agenda."

Ron Wyden

quo (D-Fla.).

The committee in 1984 convened a two-year Task Force on Science Policy to explore such issues as the role of Congress in science policy-making, the impact of the information age on science; the need for Congress to strengthen its ability to judge the quality of research programs; and how to finance research programs.

Over the years, of course, Congress also has created a bevy of sup-

> *We are spread too thin. We serve on too many committees and subcommittees . . . It is not humanly possible to give proper attention to the 13, 15 or 17 committees and subcommittees that some of us serve on.*
> — U.S. Sen. Dan Quayle (R-Ind.)

port groups to produce expert reports and advice on technical issues. These organizations include the General Accounting Office, the Office of Technology Assessment (OTA), the Congressional Budget Office, the Congressional Clearinghouse on the Future and the Congressional Research Service.

OTA, for example, produced a report on electronic banking in 1984 and will report in 1985 on a variety of computer topics, including the vulnerability of government computers to security breaches and VDT health issues.

THE CHANGING LANDSCAPE

By Peter Bartolik

The private branch exchange (PBX) industry in the U.S. has many of the characteristics of a hard-charging, high-growth market. This impression is heightened by the presence of some 40 equipment suppliers, the opportunities provided by the breakup of the Bell system and by IBM's acquisition of Rolm Corp. Yet for all its appearances, the projected revenue growth of the industry as a whole is remarkably low, which raises a question: Can the PBX industry support all the players?

Although the value of PBX shipments was projected to grow by 10% to $2.7 billion in 1984, according to International Data Corp. (IDC), a Framingham, Mass.-based market research firm, the compound growth rate through 1988 is expected to be only 6.5%.

The numbers are misleading in a variety of ways. The top three suppliers, AT&T, Northern Telecom, Inc. and Rolm, account for more than half of the total revenues, and much of the growth, in the market. Also, the market is quite segmented, with high-end systems and low-end systems projected by IDC and Hambrecht and Quist, Inc., another market research firm, to

STEVE GALLOWAY

PBX

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represent the fastest growing segments. The mid-range systems will experience low growth, according to IDC, or even decline, according to Rembrecht and Quist.

After accounting for the big three, there are 14 vendors with significant market shares (over 1% of the total) fighting for a piece of the remaining pie, according to Robbins, are the smaller companies caught in a precarious, broad-based strategy and new start-up companies that have not been able to bring their products to market quickly enough.

Observers generally agree that there are too many second- and third-tier companies chasing too few dollars, and a shakeout is inevitable over the next few years as companies that cannot keep up with state-of-the-art products fall out of the race. That, however, has not deterred a number of start-up companies and a number of foreign companies from entering the U.S. market.

The reason for the low overall growth projection is relatively simple: Unlike computer users, PBX users do not need to update equipment every three years or so to stay with the leading edge. Nor do PBX users need to acquire additional machines to alleviate increasing backlogs of processing demand. Kenneth Oshman, Rolm president, once characterized the industry predicament in simple terms, saying, "The beauty of telecommunications systems is that everybody needs one. The problem is that they only need one."

The problem is that the market is relatively saturated, and much of the growth lies in tapping the replacement market. In effect, the business goals of many companies rest on the strategy of capturing a portion of AT&T's aging customer base while also offering highly targeted new products to first-time users.

But there are a number of strategies being employed by the companies currently in the market:

■ Focus on a particular size of PBX and try to establish a broad market;

■ Target a vertical market such as hotels and motels or financial institutions;

■ Tap into the vast resale market represented by the regional telephone holding companies spun off from the Bell system and interconnect companies.

According to Charles Robbins, an analyst with IDC, "even 1% of the market is substantial," and being small in the large scale of things is not necessarily a losing posture. With future revenue

growth expected to depend more and more on enhancements to existing systems and add-on products for existing customers, an established customer base can provide steady revenue growth. Those who have most to fear, according to Robbins, are the smaller companies caught in a precarious, broad-based strategy and new start-up companies that have not been able to bring their products to market quickly enough.

Kevin Sara of Northern Business Information said that small companies can survive the shakeout of the industry by offering "very strong" products that address particular segments of the market. While vertical markets offer opportunities, companies can also carve out "large-size niches," according to Sara, by marketing sophisticated products such as large switching systems. Other companies may develop products "tuned for office

automation," he added.

Despite the great expectations that generally have accompanied the Rolm/IBM merger, 1985 is not expected to bring vast changes to the PBX market. According to Robbins, 1985 is the year for the various companies to "deliver the products they have been promising."

Sara and he does expect Northern Telecom to announce products integrating its communications offerings with office automation tech-

nology. While Rolm may announce some low-end products during the year, it will take the company two or three years to develop major products and to bring them to market.

One factor that will greatly influence the industry over the next few years is the performance of AT&T in a deregulated environment. Sara said that companies may start dropping out of contention once AT&T "gets

System 1032

Software House

Continued from page 53

its factories moving again." However, he noted, AT&T's market share has been deteriorating for some time and since deregulation AT&T has made "very little progress" overcoming manufacturing problems. "The more [AT&T's] situation deteriorates, the harder it will be to fulfill AT&T's large ambitions," Sara said.

A recent survey of 636 companies by The Market Information Center, Inc., Framingham, Mass., found very little loyalty to AT&T. According to Barry Gilbert, vice-president of the market research firm, the survey indicated that "Rolm has a good image crossed out there . . . [but] AT&T has nowhere to go but down."

While 42.2% of the respondents currently had AT&T PBX systems, compared to 24.4% with Rolm systems, when asked what system they would choose if they were to install a new PBX, 35.7% of 264 respondents indicated Rolm, 18.9% indicated Northern Telecom, and AT&T came in third at 16.8%.

An additional factor facing the

IBM, with the acquisition of Rolm, has quickly become a leading player in the industry. Analysts believe it will take two years before the merger produces major products to tie PBX's to IBM's overwhelming installed base of computers.

PBX industry is foreign competition. Northern Business Information's 1984 ranking of the top 17 PBX suppliers included eight foreign suppliers. Topping the list of foreign suppliers after Canada's well-established Northern Telecom was NEC Corp.

NEC has scored big by selling large systems through several of the regional holding companies formed by the AT&T divestiture; the company has also been promoting itself as an office systems supplier. The problem for NEC, according to IDC's Rob Bitss, is establishing distribution channels that do not compete with each other. He noted that Northern Telecom recently dropped some distributors that were competing against the regional telephone holding companies that also sell Northern Telecom equipment.

Trends on the PBX front

Before the actual merger announcement from Rolm and IBM this past year, the big news on the PBX front was the growing trend of PBX dealers linking up with computer vendors on joint development projects and computer-PBX interface architectures. First came IBM's earlier minority ownership in Rolm, followed by a similar arrangement whereby Wang Laboratories, Inc. acquired a minority ownership share of Intecom, Inc. Intecom is a vendor of large PBX systems that has scored early in sales agreements with the

divested Bell operating companies and has moved ahead to develop a niche in the sale of multitenant systems.

Robbins noted that most leading computer vendors have established agreements with leading PBX companies to develop interface architectures. That, according to Robbins, "is the battle for the office." This year, he said, there will be more PBXs integrating with local nets.

Intelligent file servers

While there has been occasional consideration of PBXs as the hub of local-area networks, Robbins does not see the PBX playing a central role in high-speed networks. However, he added, he expects to see PBX vendors develop equipment to serve as intelligent file servers in networks, and he predicted that North-

ern Telecom will soon come out with a system that will serve as a departmental file server.

Office automation and communications

The most obvious question facing the integration of OA and communications is what role IBM will play. Following a number of unsuccessful attempts to develop PBX-type equipment by itself and through joint developments, IBM, with the acquisition of Rolm, has quickly become a leading player in the industry. Analysts believe it will take two years before the merger produces major products to tie PBXs to IBM's overwhelming installed base.

Undoubtedly, however, the prestige of the IBM name will greatly enhance the image of Rolm, particularly as the roles of communications manager and management informa-

tion systems manager grow closer.

According to Robbins, "A lot of companies looked at Rolm as a key player but were concerned about what kind of support they would get from Rolm. That will now be addressed over time by the money available from IBM."

Somewhat overlooked during the excitement generated by new PBX products is the aging base of the divested Bell operating companies' Centrex installations. Robbins said that the divested Bell operating companies have made a commitment to electronic Centrex and that some start-up companies are focusing on providing enhanced features to tie into electronic Centrex. However, the general feeling among analysts is that a majority of current Centrex customers will migrate toward PBX systems when they decide to update.

Users willing to bypass AT&T PBXs for rivals

FRAMINGHAM, Mass. — A recent survey of more than 600 people who make decisions on the purchase of telecommunications equipment revealed strong interest in using private branch exchange (PBX) equipment manufactured by vendors other than AT&T.

"There is not a lot of loyalty to AT&T [in the PBX market] like there is to IBM in the computer equipment market," noted Barry S. Gilbert, vice-president of the Market Information Center, Inc., based here, which recently published the survey.

"The PBX Market, A User Survey" polled 626 companies on their current PBX equipment and their future purchase plans. Not surprisingly, AT&T had the largest installed base among those users — 42.2% — with Rolm Corp. following at 24.4% and Northern Telecom,

Inc. coming in third with 10%.

However, when asked if they would recommend their current PBX to other users, only 65% of AT&T PBX users said they would. Northern Telecom received a favorable response from 98% of its users, and Rolm received a 91% favorability rating.

Of 110 respondents who said they have definite plans to install new PBX systems within the next year, 28.2% said they would install Rolm systems, 20% said AT&T systems and 17% said Northern Telecom systems.

The survey also revealed that nearly 90% of new purchases will be digital systems and that 75% will be used in an integrated voice and data environment. Furthermore, 56% plan on integrating PBX equipment into local-area networks.

A BRIDGE TOO FAR?

One of the largest users of data processing services, the banking industry, is undergoing great change. Once an industry burdened with restrictions on services, interest rates and geographical expansion, commercial and thrift banks are expanding, both in the types of products they can offer and in the places where they do business.

This year, bankers' eyes are focused on another aspect of deregulation: interstate banking, or the establishment of branches across state lines.

The U.S. Supreme Court is expected to decide whether or not it will hear a case on the validity of "regional compacts" established by several state legislatures in order to discourage takeovers by large institutions from outside their borders. This combines with a continuing congressional battle over interstate banking laws and a move by the comptroller of the currency in November giving 13 bank holding companies approval to open 29 banks in nine states, putting interstate banking in the forefront of banking issues.

Communications capabilities and flexibility within computer departments are prevalent among the concerns expressed by bankers when *Computerworld* posed the question: What will MIS departments need to supply their parent banks in order for them to compete in the new banking environment?

As the largest institution in New England and one of the parties in the case being presented to the Supreme Court,

By Maura McEnaney

MORT BANNON

Bank of Boston has been an aggressor in the interstate banking market. The institution has a toehold in every one of the six New England states and received permission from the controller of the currency to start five bank branches in Florida.

"We see technology as a competitive weapon that will allow us to move out into the customer space but lock out the competition in the process," said William Synnott, senior vice-president at the Bank of Boston's Information Systems and Services Group. "Electronic banking is going to be the facilitator in interstate banking," Synnott said.

With two data centers, a worldwide communications network, a joint-venture automated teller network and a wide base of debit cards, Bank of Boston is out to illustrate what many bankers feel is the key to survival — providing less expensive services to a wider customer base.

According to Synnott, the bank is putting together a technical architecture that will be flexible enough to accommodate a variety of services, products and locations.

"A bank that has a worldwide telecommunications system in place is going to be in a much better position than those who have a splintered array," he said. Bank of Boston is also working to implement an electronic document transmission system that would provide access to multinational corporations. Through a local-area network in Europe, customers could sit down at a terminal, transmit a letter or document that would go directly to one of the institution's international nodes and then feed into a network in the U.S.

Providing processing services to other institutions is already a main part of the bank's business, but the bank will continue to make advances in that direction, Synnott said. "We run the railroad, and they pay us a fee to ride on it."

But connecting systems within an institution is not the only challenge facing banks today. Bancone in Columbus, Ohio, is the second largest holding company, with $8 billion in assets. In banking circles, the bank is considered to have a progressive attitude toward technology, with an extensive automated teller machine (ATM) and electronic funds transfer network. The bank has also been a partner in several large mergers over the past few years.

John Fisher, Bancone senior vice-president, said mergers with other large institutions can create a problem as to what to do with two very different data centers. To date, there have been two approaches taken in the Ohio market, Fisher said. Some holding companies have deferred commingling their data processing departments; others have moved quickly to provide centralized processing. Dealing with merged DP departments can be "gut tearing," he said, and future success depends on management's ability to cope with the experience.

According to Fisher, "I don't think DP departments can prepare for interstate banking, just react to the result of it." Nevertheless, he said, DP executives who have gone through large intrastate mergers are in a "better mental framework to deal with interstate banking."

Bank of Boston's Synnott agreed. "If you have 10 banks in 10 states, you have 10 different data

Bank of Boston is putting together a technical architecture that will be flexible enough to accommodate a variety of services. The bank is working to implement an electronic document transmission system that would provide access to multinational corporations. Through a local-area network in Europe, customers could transmit a letter or document that would go directly to one of the institution's international nodes and then feed into a network in the U.S.

centers. . . . If you were starting from scratch, it would be a lot easier."

In addition to these management requirements, like other institution leaders, Fisher said, "banks that have built large telecommunications installations will be better prepared

than those who stay at home tending the store."

Given the array of expansion possibilities, exactly what to prepare for is a problem at some banks. "As a DP manager, you really don't know what's going to happen; you don't know what kind of a situation the parent is going to drive you into," said C. Thomas Cook, first vice-president of Security Pacific Automation Co. and former MIS director at First Interstate Bank in Los Angeles.

According to Cook, flexibility within bank DP departments is the main issue. "We really don't know what effect deregulation is going to have." If state barriers are broken down, institutions can get access to new markets either through blanketing ATMs, establishing loan centers or buying a franchise, he said. "Each

brings with it a different technological solution. . . . You can't have a cookie-cutter solution to any of those, so, from state to state, it's going to be different."

One institution that has taken a slightly different approach toward interstate banking is First Interstate Bank. Through franchising, First Interstate has established more than 1,000 branches that employ 6,000 ATMs in 11 Western states.

In 1976, the bank embarked on a network tie-in that allows First Interstate's ATMs to communicate to six remote sites and then to a central data base site in El Segundo, Calif. "We built an interstate network early in the game, and that is our success," said Rick Higgins, executive vice-president in charge of research and development with First Interstate Services Co., the bank's DP subsidiary.

But according to Higgins, First Interstate too, is looking toward the future. "We took IBM Systems Network Architecture and built a network based on that methodology. That has been good to us," he said. However, First Interstate is looking to build gateways that will provide network access to more than just Interstate customers.

The bank has installed its own satellite dishes in five Western locations, and in Portland, Ore., the bank is experimenting with providing communications through a CATV network.

While First Interstate developed its communications architecture over time, Bankers Trust Co. in New York has plunged into things a bit more rapidly. Last May, Bankers Trust established a position to create and develop a strategic communications architectural environment to integrate systems through a common network.

Although the institution has sold most of its retail operations, it is concentrating heavily on providing financial services throughout the world. Carmine Vona, senior vice-president of the bank's technology department, is in charge of overseeing that project. According to Vona, today's banking systems must operate on a global level and be integrated within the institution at both high and low employee levels. "The threat is no longer brick and mortar," Vona said. In order to establish a national banking position, "all we need is an intelligent terminal and a telephone line," he said.

Systems must also be able to handle a vast amount of reporting requirements levied in response to the industry's volatility and the failure of institutions like Continental Illinois and Seattle First in Washington, he said. "We are not going to be denied from entering new businesses because of a failure to meet reporting requirements," Vona said.

According to Vona, through the new network, Bankers Trust will have a standardized informational process that will allow it to keep track of customers doing different lines of business with the company. Bankers Trust is preparing "to jump onto any new opportunity that is either already available to us or provided to us through deregulation," he said.

"If there are customers in Florida that are interested in us, we intend to reach them and compete with the bank that has offices in Florida."

INTERSTATE BANKING

Deregulation leads banks to up DP equipment demands

Software development is moving slowly in the financial services industry. As a result, software houses and banks alike are willing to pay a tremendous premium for financial applications developers — Kevin Scully, vice-president and division manager of financial systems at Logica, Inc.

While bankers are facing the problem of how to gear up their DP departments for deregulation, the new environment is putting additional pressures on vendors as well.

Over the next several years, vendors must respond to bankers' needs of providing more functions at less cost, according to C. Thomas Cook, past vice-president of Security Pacific Automation Co. in Los Angeles.

"All financial institutions will [pressure vendors] to bring in more function at less cost," he said. These demands, combined with the rapid changes in technology, will shorten the life cycle of the products, Cook maintained.

The incompatibility of systems and the specific software needs of institutions today require most banks to tailor software to suit their own needs. At Bank of Boston, the MIS department consists of 550 professionals working in systems development, communications and DP.

"We have to write our own software," said William Sennett, senior vice-president, because the lack of standards provides no connection between the bank's IBM, Digital Equipment Corp. and Wang Laboratories, Inc. systems.

This need for specialization has opened the door for financial institutions to market products of their own. Last summer, Bankers Trust in New York established a marketing group for the bank's software products, time-sharing and information services. According to Carmine Vona, senior vice-president of the bank's technology department, the group will market Resources Management On-Line System, a foreign exchange trading module. The institution is also planning on released modules for liability management, government security training, money market instruments and municipal securities training.

According to Kevin Scully, vice-president and division manager of financial systems at Logica, Inc., an international computer software company that specializes in financial services, low-volume banks will continue to buy off-the-shelf software, but in the end they will pay the price for not coming up with the customized solutions developed by large institutions.

According to Scully, software development is moving slowly in the financial services industry. "The technology is there," but software isn't coming out fast enough to keep up with the demands of the marketplace, Scully said. As a result, software houses and banks alike are willing to pay a tremendous premium for financial applications developers, Scully said.

George L. McTavish, president of Dallas-based Hogan Systems, Inc., a financial software vendor, acknowledged that his company's biggest challenge was providing those products that keep banks competitive and seeing that they are implemented in a timely fashion.

Keeping up with technology should not be a piecemeal approach, according to Robert Metzler, vice-president systems development at First Computer Services, Inc., a DP subsidiary of First Union National Bank in Charlotte, N.C.

"We are seeing the industry reach a point where the demand for automated functions continues to accelerate and technology is advancing faster than it can be incorporated into many existing systems," Metzler said. "Systems and pieces of systems are upgraded and replaced on a regular basis."

To change that approach, Metzler suggests an automated approach to automation development, using computer-aided design and manufacturing. "We have provided the financial institutions with automated equipment, but we have not developed an automated function for those who are providing the automation.

"Only after the financial industry demands coherent automated systems designed by systems architects and built by a process supported by an integrated set of automated tools, will we be able to rise above piecemeal, inefficient and costly systems," he said.

IBM'S SOFTWARE STRATEGIES

DRESSED FOR SUCCESS

By John Gallant

eyond the bright searchlights of science,
Out of sight of the windows of sense,
Old riddles still bid us defiance,
Old questions of Why and Whence.'
— William Cecil Dampier Whetham

Trying to predict the large systems software products IBM will announce in 1985 or attempting to divine the software strategies the blue giant will advance in the upcoming year is like trying to solve a modern-day riddle as baffling as the ancient conundrum posed by the Sphinx.

Just as the Sphinx sat soundlessly contemplating the shifting desert sands, IBM reflects on the changing fortunes of the computer industry from its lofty position, weaving the strategems that ensure its dominance over that realm. IBM's public pronouncements regarding its future intentions are few, and its pilots are close-mouthed about the corporate ship's course. Those who attempt to foretell the computer colossus' moves do so at their own risk. Experts can appear as uninformed as the common man when IBM changes tack, seemingly without warning.

In an industry characterized by a handful of moderately large companies and a multitude of smaller, fledgling firms and

IBM'S SOFTWARE STRATEGIES

TYPES OF PACKAGED SOFTWARE BY PROCESSOR SIZE
U.S. VENDORS, WORLDWIDE REVENUES
(Dollars in millions)

	1983				1988			
	System / Utility	Application Tools	Application Software	Total Packages	System / Utility	Application Tools	Application Software	Total Packages
Independents								
Large-Scale System	195	420	740	1,355	1,065	2,555	3,265	6,875
Medium-Scale System	255	580	980	1,815	1,510	5,520	4,700	14,325
Micro System	115	295	330	740	985	4,475	4,700	10,160
Hardware Manufacturers								
Large-Scale System	815	340	115	1,270	3,975	1,700	290	5,965
Medium-Scale System	1,335	735	295	2,365	6,760	3,940	1,090	11,790
Micro System	230	235	105	570	2,515	2,090	675	5,280
TOTAL								

IDC CHART

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niche-dwellers, IBM is the Goliath of the software world. According to International Data Corp. (IDC), a Framingham, Mass.-based market research firm, IBM's software revenues for 1983 were $2.4 billion. New York-based investment firm E. F. Hutton & Co.'s Michael Geran, a vice-president of research, put that figure closer to $2.6 billion, an amount that dwarfs the revenues of even the largest independent software supplier.

"IBM is obviously the dominant company in software," said Harry Edelson, managing partner of Edelson Technology Partners, a venture capital firm located in Saddle Brook, N.J. "The whole world is based on IBM software. There are really no other big companies in software. There are a lot of DBMS and applications companies, but no real giants. Every one of them has gone for a niche based on IBM's hardware and software. Software is the key to the future, and IBM holds that key."

Some say the riddle of IBM's software strategy is as simple as the following:

Q. Where can a $40 billion company go?

A. Anywhere it wants.

But according to others, that interpretation is overly broad and belies IBM's real position in the increasingly complex large systems software marketplace. Despite its size, analysts say, IBM is faced with some very real constraints and problems — which even the smallest software companies experience — in maneuvering the software straits.

What are those constraints? For one, observers say, IBM is locked into an evolutionary migration path that precludes, or at least hampers, the introduction of technologically innovative software products. Since the customer upheavals surrounding the announcement of the 360 series mainframes in the mid-1960s, IBM has followed this evolutionary track in most of the product areas in which it competes.

No software surprises from IBM

"I do not think you will see any surprises in software next year from IBM," E. F. Hutton's Geran said. "IBM is locked into an evolutionary course that started more than 20 years ago. It just keeps adding layers of functionality to its existing software. That, by its very nature, inhibits innovation. IBM cannot set the clock back to time zero. The company is also limited in what it can do by the size and disparity of its user base.

"For the independent suppliers," he continued, "I would not predict any major threats from IBM in the short term. If they can follow the evolutionary course, they can stay current with or move ahead of IBM."

Dennis Volsz, executive vice-president of Management Science America, Inc. (MSA), an Atlanta-based supplier of large systems applications software, echoed Geran's comments.

"IBM has a couple of problems in the area of software," he said. "It tries to develop software that fits the entire spectrum of users, but it still has to provide things for its top users, who have problems far more complex than others. As a result of solving problems for the big guys, IBM does not make software that is easy for the little guys to use. When

IBM software revenues, package prices expected to rise

While it may be risky to predict the market areas in which IBM will make its presence felt more strongly next year or to foretell the actual products Big Blue will announce, one thing seems certain about IBM and software.

One is that software will play an increasingly important part in the revenue growth of the world's No. 1 computer maker (see chart page 72). Another is that IBM's software prices will continue to rise — perhaps dramatically.

According to Francis Gens, director of information systems research for the Yankee Group, a Boston-based market research firm, IBM's software revenue made up 4.9% of

its total revenue in 1982, a figure that rose to 5.7% of IBM's $40 billion total revenue in 1983.

IBM's software revenue would be nearly 6.5% of the total in 1984 and is expected to grow to 8% of total revenues by year-end 1985. By the decade's end, he added, software will represent between 15% and 20% of IBM's total revenues.

Gens' estimates are conservative in comparison with other predictions. According to Robert Djurdjevic, president of Annex Research, a market research firm located in Phoenix, IBM's software revenues will represent between 7% and 10% of the company's total revenue for 1984 alone, a figure that translates

into software revenues of between $3.2 million and $4.8 billion.

"By the end of 1985," Djurdjevic said, "software will represent a very sizable portion of the total. That growth within the total is significant when you consider that IBM's business as a whole is growing [currently] by about 15% a year."

"Unquestionably, IBM is looking to software for increased revenue," Gene noted. "IBM is risking financial stability by converting a large portion of its hardware base from lease to purchase. Historically, that leased base helped IBM flatten out the highs and the lows in its revenue

'A sizable portion of the total'

picture. To offset that shift, IBM is, in effect, building up a large rental base in software. Software revenues will not totally offset that hardware shift, but they will mitigate it some-what."

Combined with the lease/purchase shift, IBM is confronted with falling hardware prices that increase its reliance on software revenues. To ensure that software revenues continue to grow, analysts said, IBM must both sell more software and increase the price of its software products.

Will get firms to buy more software

"I think [IBM] sees software revenue becoming as much as 40% to 50% of total revenues 10 years from now," said Martin Goetz, president of Applied Data Research, Inc., a Princeton, N.J.-based supplier of systems software. "[IBM] will move to get companies to buy more software. The amount of software data processing departments currently buy is quite discretionary."

The upward pricing strategy is a more worrisome trend as far as users are concerned. "Software prices are going to go up, and they are going to go up dramatically. I believe that IBM's stated goal is that, by 1988, it wants its software revenue to equal its mainframe revenue," said Marc Butkin, vice-president of Gartner Group, Inc., a market research firm in Stamford, Conn. "If you look at the implications of that statement, it suggests that IBM will have to increase software revenues by about 50% a year."

According to Djurdjevic, IBM has very nearly done just that. Between 1980 and 1984, he said, IBM's software revenue has grown at a 49.8% compound annual rate in the U.S. To maintain that type of growth, Djurdjevic predicted that IBM will raise software prices between 30% and 50% during the next two years. He said also that IBM will increase the frequency of new releases for existing software products, with each release marked by a higher price tag.

"All IBM has to do is look at the price of, say, its Cobol compiler or its Cobol runtime library, figure out how many installations use the products and raise the price $5 a month," said Phillip Dorn, president of N.Y.-based Dorn Computer Consultants, Inc. "It does not take much in terms of price increases to come up with some substantial revenue because of IBM's incredible user base."

Value pricing

According to Butkin, IBM may also begin to advance a newly formulated pricing strategy that could have a dramatic effect on users — value pricing. "Value pricing means that every time a user logs on to the software, you pay the vendor something. The more you use a product, the more you pay . . . the net effect is that the user will wind up paying more money."

Thus, analysts said, IBM's software strategies for 1985 clearly will be formulated in light of the computer giant's bottom-line requirements.

Djurdjevic noted, "Unlike other companies that develop a product first and then build a business plan around it, the business plan comes first at IBM."

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XA guiding course of IBM operating systems, software

It appears that IBM's moves in the operating systems and software arena can be summed up in two words: Extended Architecture (XA). According to analysts interviewed by *Computerworld*, IBM continuing to emphasize the flagship of its operating systems line — MVS/XA — and perhaps introducing an XA version of its increasingly popular VM operating system. In addition, big Blue may announce new releases of its systems software, designed to utilize the 31-bit addressing space that XA provides.

"I do not expect anything to happen with plain [MVS/SP]. It will be functionally stabilized fairly soon," said Philip Dorn, president of N.Y.-based Dorn Computer Consultants, Inc. "Eventually, everyone will have to be MVS/XA because the next generations of machines will be XA machines. I would guess that by the end of 1985, 60% to 70% of all MVS shops will have migrated up to XA."

Major releases each year

According to Robert Djurdjevic, a computer industry analyst and president of Annex Research, a market research firm located in Phoenix, users of MVS/XA can expect at least two major releases of that operating system each year until the end of the decade, with each release accompanied by a price increase. Most analysts predicted that IBM's soon-to-be-released high-end processors — code-named Sierra — will likely boast new functions that only MVS/XA users will be able to utilize. That, observers said, represents another of IBM's strategies for encouraging upward conversions from other operating systems.

"I think there will also be new systems software coming out from IBM, including compilers and perhaps a data base management system that takes advantage of XA's additional memory and address space," said Martin Goetz, president of Applied Data Research, Inc., a Princeton, N.J.-based supplier of systems software. "I think IBM will force users to upgrade through improved software that only works with XA. Also, IBM traditionally comes out with newer [peripheral] devices that only the top operating system will support."

But in light of the rumored introduction of the Sierra line, some observers said IBM will probably be content to leave MVS/XA itself unchanged for the coming year.

"Next year is complicated," said Harry Edelson, managing partner of Edelson Technology Partners, a venture capital firm in Saddle Brook, N.J. "With the Sierra line to be introduced, you could see some major shifts in IBM's revenue base. It is doubtful that you will see new wrinkles in [operating systems] software in light of that. You probably won't see much of a software thrust until . . . the machines are delivered."

One operating systems software thrust that analysts said is overdue from IBM is the introduction of an XA version of VM, a strong interactive environment that continues to win adherents in the user community. VM/XA would allow users to use the 31-bit addressing space of XA and help them overcome virtual

memory constraints.

According to Shaku Atre, president of Rye, N.Y.-based Atre International Consultants, Inc., VM is rapidly becoming a strategic product for IBM. "I think IBM is moving more forcefully into the VM area in order to satisfy the information center type of environments. Most of the announcements you will see in the MVS/XA area you will also see in the VM arena. VM has been shortchanged for years, but I think IBM has realized that VM is a much better interactive processing system than just MVS with TSO."

"When is VM/XA going to happen?" Dorn asked. "I will tell you that a lot of users have [complained]

about that one. It is long overdue. I personally do not understand what problem IBM is having with VM/XA. It is obviously a critical system for [IBM] today."

Debut of 31-bit systems software

In addition to the possible introduction of VM/XA, a number of IBM observers said the industry giant will make available 31-bit versions of important systems software. According to Francis Gens, director of information systems research for the Boston-based market research firm the Yankee Group, IBM started down that path with the introduction of subsystems such as the Network Communications Control Facility

and Vsam for MVS/XA.

"In terms of software," Gens said, "1985 will be the year of virtual storage constraint relief. XA allowed users to address memory over the 16M-byte line, but much of the systems software is still limited to that line. It is possible that IBM will announce 31-bit versions of subsystems such as CICS and IMS and other software that will be able to operate above the 16M-byte line."

What will be the fate of IBM's third major operating system — DOS/VSE — in the coming months? Analysts seemed to feel that IBM would love to kill off DOS/VSE and support only two major operating systems — if it only could.

IBM to play hardball with applications software?

"If you had asked me a year ago what IBM would be doing in applications, I would have said 'nothing special.' But all the announcements of IBM's microcomputer software this year have caused me to scratch my head and think maybe the game is going to change. I never thought IBM would get into micro software, but it sure did. That is not a precursor to getting into the mainframe applications area, but I am not as sure as I was that IBM will continue to do nothing," said Philip Dorn, president of N.Y.-based Dorn Computer Consultants, Inc.

As with Dorn, many IBM watchers are puzzled by Big Blue's strategy in the increasingly lucrative large systems applications market. With the exception of some very widely installed packages, such as its Copics and Mapics manufacturing software, IBM has not played a big part in the evolution of applications software.

Because developing applications requires massive resources and because most of the widely installed packages supplied by the independents have enjoyed years of fine tuning, many analysts said IBM would have a difficult time making its presence felt in that market.

Despite accusations, Implan uneasy

In addition, observers said, IBM would probably not be able to overcome the huge conversion problem involved in trying to edge out existing, installed packages. And, they noted, applications tied to IBM's aging IMS or fledgling DB 2 data base management system (DBMS) would be unlikely to meet with widespread user approval. Despite the sense that IBM has conceded the applications market, for the most part, to the independents, insiders share Dorn's uneasiness. If the ubiquitous blue force were to rear its head in the applications arena, could it turn the tide on the independents?

"I think IBM has conceded the market for the time being, but I do not know that it has decided to concede it forever. IBM has stated that its corporate objective is to be a big factor in every single market, and 'applications software is certainly a sizable market,'" said Dennis Vohs, executive vice-president of Management Science America, Inc., an Atlanta-based supplier of large systems applications software.

"IBM has had its hands full with systems software," said Francis Gens, director of information systems research for the Yankee Group, a Boston-based market research firm. "That software has faced the least competition, and it has great price flexibility and the strongest hold on users. In light of that, I think it unlikely that you will see any major moves from IBM in this area."

One area into which a number of observers said IBM may move next are applications development aggregations. "I think next year we will continue to see improvements in the applications areas where IBM is strong, such as manufacturing, and we will see the introduction of products targeted to the scientific area," said Michael Gens, vice-president of research for New York-based investors E. F. Hutton & Co.

Analysts were split over whether IBM would choose to enter the appli-

cations arena by acquiring marketing rights to third-party software or even purchasing outright one of the independent suppliers. IBM has exhibited a growing inclination to do just that, as evidenced by its acquisition of Rolm Corp., its interest in Sytek, Inc. and its marketing arrangements with Artificial Intelligence Corp. and Comshare, Inc.

Independents have head start

"IBM really does not have the expertise to write a major applications package," said Marc Butlein, vice-president of Gartner Group, Inc., a market research firm in Stamford, Conn. "If you were going to supply an application, would you start from scratch or

would you go out and buy someone else's product? . . . I think the independents have too much of a head start, and the expertise is with the independents."

The Yankee Group's Gens echoed Butlein's sentiments. "IBM will be encouraging more deals with the independent applications vendors," he said. "In nonstrategic areas, IBM is depending more heavily on outside companies. The larger IBM becomes, the more difficult growth becomes."

But Dorn disagreed. "An acquisition? Well, that would get IBM in with both feet, wouldn't it? On the other hand, most of the independents have produced software that works in multiple environments.

Could IBM be a software vendor dealing with all those other subsystems that are not its own? That is hard to figure," he said.

Observers said that any move by IBM into applications would probably have to be preceded by some attempt on Big Blue's part to shore up its sagging DBMS house, considering that the DBMS is quickly becoming the core component in most vendors' applications strategies.

Explained Vohs, "To have a big share of the market to go after and reduce the amount of expense that goes into development, IBM is going to want to get a pretty dominant share of the DBMS market, which it slipped in this year."

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IBM sliding, independents climbing in DBMS market

To say that IBM is losing ground in the data base management system (DBMS) arena is technically correct, but the statement belies that IBM's dominance in that market segment. According to "IBM Software Environment," a report from Framingham, Mass.-based International Data Corp., a market research firm, IBM's IMS product and its relational offspring DB 2 account for some 60% of the installed DBMS base today.

But IBM is slipping. Independents are slowly gaining market share against the aging, hierarchical IMS and the nonproduction-quality DB 2. Thus, many analysts ponder what IBM's strategy will be in the upcoming year in this critical market.

"I think IBM is trying to make DB 2 a more production-oriented DBMS," said Martin Goetz, president of Applied Data Research, Inc. (ADR), a Princeton, N.J.-based supplier of systems software. "DB 2 is currently thought of as a system to complement IMS. But as IBM gains experience with the product, to the extent that the company can improve its performance, I am sure it will.

"I am not convinced of how serious IBM is with the DB 2 strategy," said Philip Dorn, president of New York-based Dorn Computer Consultants, Inc. "It is an important product, but I cannot find a clear line on IBM's software strategies in a lot of

areas, and this is one. The only strategy I can see is the one IBM announced publicly, which is a side-by-side arrangement. You are essentially running two logical machines, an IBM machine and a DB 2 machine with some crisscrossing."

Most observers said IBM would follow a side-by-side strategy of improving the performance characteristics of DB 2 while continuing to patch and add minor enhancements to IMS. IMS must be supported, they said, because of its huge user base and the massive investment in software IBM's clients have made during the product's 14-year lifetime.

One possible solution to DB 2's performance problems, insiders said,

might be found in upcoming hardware announcements. Some analysts predicted a microcoded version of DB 2 will be one of the features included in the Sierra line.

"A microcode version of DB 2 is the next logical step," said Michael Geran, vice-president of research for the New York-based investment firm E. F. Hutton & Co. "IBM wants to, and has to, improve the functional interfaces and the overall functionality of DB2, and one way to do that is through microcode. I do not think IBM is worried about opening up DB 2 to the (plug-compatible manufacturers). PCMs are no longer an issue in the computer industry; their market share is just too small."

Shaku Atre, president of Atre, N.Y.-based Atre International Consultants, Inc., agreed. "I think performance is the No. 1 feature IBM has to improve with DB 2. To make anything production-quality, you

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have to have better performance and less real memory use. It is possible that IBM will put some of the access methods into microcode."

But ADR's Goetz said IBM has shown no signs of making such a move. "I believe a microcoded version of DB 2 is possible, but in briefings we have had with IBM, we have been told that there are no plans to put any part of the product into microcode. IBM does not even believe that DB 2 will be stabilized for two or three years."

One move that analysts said is possible is the introduction of a fourth-generation language-based application development facility and related programmer productivity tools. IBM's Development Management System (DMS) and its Application Development Facility (ADF) are recognized as less than cutting edge technologies, and IBM may attempt to boost its fortunes in that growing market by announcing a more advanced system based on one of its DBMS.

"IBM does not have a good fourth-generation application development language," Goetz said. "IBM's DMS and ADF are very poor products. The company has a very large group of people in Dallas working on the development of a fourth-generation system."

IBM'S SOFTWARE STRATEGIES

IBM builds software, it takes in the whole market spectrum, which makes it very difficult for IBM to satisfy an individual user."

Also, Voba said, IBM's sheer size can sometimes limit its mobility. That represents an important limitation considering that timing is often a critical factor in the success of a software product. "It takes IBM an inordinate amount of time to run a potential product by all the people who have to review it. The software, for example, may have to be reviewed by the disk people, the 4300 series people and the IMS [data base management system] people. The product has to be compatible in all those environments. Other software companies, being much smaller, can be more versatile in introducing new technology."

And despite its aura of invincibility, IBM's resources are not limitless. Even Big Blue must target its limited technical manpower and focus — albeit massive — research and development toward those market areas in which it can compete most effectively.

That assignment of resources, many analysts said, explains why IBM has dominated some sectors of the large systems software arena, such as operating systems and systems software, and why it has been

IBM U.S. REVENUES BY PRODUCT CATEGORY

less successful in others, such as prepackaged applications.

"IBM's technical manpower is limited, as with all companies, so it concentrates on the areas in which it does well," Geran said. "It has been a case of diversion of resources. IBM has so many things going at once that it has not really had time to focus on areas such as applications. Thus, IBM selectively concedes portions of the [software] market to the independents who can then gain ground in those areas."

"IBM has too many things on its plate," said Marc Butlein, vice-president of Gartner Group, Inc., a market research firm located in Stamford,

Conn. "For example, IBM has about 500 people who rewrite and support the VM [operating system] alone. That is one hell of an investment. IBM has only so many resources, and it wants to leverage them where it can."

Such internal constraints make it reasonably clear that, despite impressions to the contrary, IBM cannot nor will it in all niches of the large systems software market — at least not all at once. Thus, in the absence of a public statement of intent, outsiders are left to peer into a rather foggy crystal ball to predict where IBM will move in the coming year.

Observers see IBM continuing support of SNA

Observers expect to see little in the realm of important announcements in Systems Network Architecture (SNA) and communications software for the upcoming year. They said IBM will continue to strengthen its commitment to SNA and to centralization and the reliance on mainframe processors in a distributed environment that SNA makes possible. Analysts said IBM may announce network management products, and they said users can expect enhancements to IBM's existing communications software.

"I think IBM is definitely interested in tying everything in to the host," said Dennis Volz, executive vice-president of Management Science America, Inc., an Atlanta-based supplier of large applications software. "SNA is addressing that strategy. IBM is saying, 'Use your mainframe system as your storage.'"

A number of observers said they believe IBM is growing receptive to the need to accommodate evolving worldwide communications standards, such as the Open Systems Interconnect and X.25.

WHAT'S ON YOUR MIND?

By George Harrar

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TOOLS OF THE TRADE

By Paul Korzeniowski

S ix years ago, corporate pilgrims were lured from a land of calculators and mainframe-produced, green-line paper reports to a new world of microcomputers. There, the pioneers discovered an abundance of white-collar riches.

Electronic spreadsheets swiftly manipulated rows and columns of numbers and allowed managers to examine a number of hypothetical budgets.

With a data base manager, an administrator could store records of department purchases and quickly find the name of the typewriter ribbon supplier. Word processing software allowed even the one-finger typist to compose a memo for his supervisor. Using communications software, a stock analyst could capture stock market information and insert it into his spreadsheet.

As word spread of the riches the new world offered, many joined the pioneers. Others were content with the calculators and mainframe tools.

Today, the pioneers are further extending the microcomputer software frontier. Classes of software that do not fall under the mantle of the four traditional applications are being explored. These applications consist of project management, presentation graphics, outline processing, desktop managers and "mindware."

The explorers are few. But many companies are still attempting to convince workers to supplement the green-line reports and calculators.

While some question what riches the new frontier offers, others are convinced that its benefits are so great that old-world hard-liners will be lured to the new world.

Project management

For years, mainframe project management software has been available. Slowly, it is moving into the microcomputer arena. Project management packages allow a user to break a project, whether it be building a hotel or developing an application, into a series of steps. Each step's cost, deadline and necessary resources (material and personnel) are entered into a micro.

Using critical path analysis or Gantt chart techniques, the software illustrates a project's progress and monitors resources and costs.

Although microcomputer project management packages have been available for a few years, they have yet to gain a foothold in most corporations. "We have some interest in project management packages," Ron Goldfarb, manager of office automation at Pratt & Whitney Aircraft Group in Hartford, Conn., said. "I expect it to increase as these packages get better."

First-generation project management packages were limited by storage space (most run in 256K bytes of random-access memory) and by the weak processing power of the IBM Personal Computer. "Most packages did little other than automate a manual task," according to James Haner, an independent microcomputer consultant with Dynacomp in Palmdale, Calif.

"The user did not gain the ability to perform 'what-if' calculations that make microcomputer packages useful." Other limitations are the packages' slow printing speeds, less than adequate documentation and non-user-friendly features.

Some of these limitations are being overcome. "There has been a fundamental change in project management packages," said Richard Strauss, vice-president, products at Corporate Software, Inc., a Waltham, Mass., software distributor. "At first, packages only tracked one project at a time. Now, there are packages that monitor a number of projects and a number of projects. That capability is what most managers require."

But even with initial limitations overcome, it is not clear how many people will buy project management packages. "Now, it is used primarily by the MIS manager and has yet to hit other markets."

Robert Lefkowitz, director of microcomputer systems software research at Infocorp in Cupertino, Calif., disagreed. "Project management is still a solution looking for a problem. It has been available on mainframes for 15 years and it hasn't been popular. Some people use it but most do not have the discipline or the need for it."

Presentation graphics is another emerging software category that has been available for a few years. With Lotus Development Corp.'s 1-2-3 came the ability to transform a spreadsheet loaded into a chart or graph. "We had been pushing presentation graphics for two years without much success," Goldfarb said. "It is only recently that

Micro managers lament missing links

While software manufacturers have been busily developing new categories of software such as on-line processing and "mindware," microcomputer managers continue to search for a complete micro-to-mainframe link.

"Despite all the hype, we are still missing the complete link that would allow a user to access data regardless of where it resides and easily insert it into a spreadsheet like [Lotus Development Corp.'s] 1-2-3," noted Ron Goldfarb, manager of office automation at Pratt & Whitney Aircraft Group in Hartford, Conn.

'Little true downloading'

The absence of this link has prevented many corporations from effectively integrating mainframe and microcomputer data.

"There is little true downloading taking place," maintained Alan Gross, technical planning specialist at New York-based Smith Barney Harris Upham Co.

"It is just too difficult. What companies do is take summary data from mainframe reports and load it into microcomputer applications. The microcomputer does not com-

plete any ad hoc analysis or determine what data should be extracted from the mainframe."

Advances have been made, however. "The physical connection is there," Gross noted. "What is lacking are better tools for formatting data into and out of a utility like Software Arts, Inc.'s Data Interchange Format."

Goldfarb noted, "A product like [Information Builders, Inc.] Focus works well with PC Focus, but it doesn't work with many other packages. The user does not want a link for each package."

demand has increased. We just completed a survey of our users and presentation graphics we use ions they were very interested in."

For interest to continue to mushroom, hurdles have to be overcome. "Current presentation output is just not high quality," Lefkowits maintained. "When systems are good for in-house use. But we are turning 300 analysts at a conference and would not think of using a microcomputer package for that presentation."

The chief problem with microcomputers is the lack of powerful output devices. Rather than working with microcomputer devices, many companies turn to dedicated presentation-quality output devices. "We have our graphics work done in-house with our typesetter," suggested Steven Machlis, microcomputer consultant in the research and development group at Goldman Sachs & Co. in New York.

A slew of new devices is being introduced to increase microcomputer output quality and flexibility. Some products transform a photograph into computer input and others allow a computer to replace a facsimile machine. The device that user firms seem most interested in transforms a screen or a report into a slide.

These machines may spark interest in presentation quality output. "I think that demand for packages that produce simple bar and pie charts will remain the same in 1985," Maureen Fleming, manager of software research at market research firm International Resource Development in Norwalk, Conn., predicted. "But I think that [the] new products [that] work with image-processing devices will experience a boom."

With an outline processor, a user constructs a hierarchy of ideas and is able to randomly move items so that relationships may become clear. The concept of the package is difficult to grasp. Dave Winer, president of Living Videotext, Inc. in Mountain View, Calif., was unable to describe succinctly Videotext' Thinktank and urged potential users to play with it before trying to determine exactly how it worked.

Outline processing is one of the key features that Ashton-Tate has touted for its Framework package. The company has stated that people work in outline rather than spreadsheet fashion.

Therefore, spreadsheet users may not find outline processing helpful. "Our users are number crunchers and need spreadsheet facilities rather than idea processing," Machlis claimed. "Outline processing is just not relevant to financial workers. With a package like Framework, there is not enough memory to store calculations and work with the outline processor."

Rather than forging a new category of software, outline processing may merge with word processing. "There is a huge market for outline processors tied to word processors," Fleming said. "An outline processor can be sold, like a spelling checker, as a utility."

While outline processors can be used to attempt to order one's thoughts, desktop managers unclutter one's desk. Most packages provide notepad, Rolodex, calculator and automatic telephone dialing facilities. Rather than working as a stand-alone application, they run in background and are available at the touch of a keystroke.

"There is a big market for desktop software," Fleming said.

Strauss disagreed. "Desktop organizers are nice gadgets, but they are not very useful," he said.

Mindware is a loosely defined category of software that sharpens personal skills. "Unlike other packages that allow one to delegate work to a subordinate, mindware cannot be delegated," William Zachmann, vice-president at Interna-

tional Data Corp., a Framingham, Mass., market research firm, said.

The reason that mindware cannot be delegated is that its output depends on the user's input. For example, Human Edge Software Corp.'s The Sales Edge asks a user a number of questions about himself and his perception of a potential client. The software then produces a printout coaching the person on the best approach to the client.

Other packages claim to help sharpen managerial, decision-making and sales skills.

Zachmann predicted that mindware will be one of the

most dynamic areas of innovation between now and the end of the 1980s.

Other analysts do not deem mindware capabilities significant. "For a number of reasons, I don't think that these packages will be popular," Strauss suggested.

"Usually, these packages have to be approved by a worker's supervisor, and I do not think that most workers are going to ask their boss for a package that teaches them how to do their job. Also, most people do not have the time to learn how to use these packages. Few people believe that a computer can do their job better than they can."

LATE FOR DINNER
By David Olmos

'Japan's prime target today is the DP industry. Domination of the semiconductor market in the U.S. is only a part of an overall strategy that intends to gain control of the computer industry in this country. Clearly, IBM and every other computer manufacturer in the U.S. are under attack.'
— Charles E. Sporck, president of National Semiconductor Corp., in remarks to a Los Angeles gathering of securities analysts, as quoted in *Computerworld*, March 27, 1978.

For years, there have been dire warnings that Japan will one day come to dominate the U.S. computer industry much as it has the steel, automobile and consumer electronics industries. Japan's computer companies, often reaping the benefits of American technology, have, in fact, made great strides in a short time, rapidly narrowing the huge technological lead the U.S. enjoyed in the 1960s.

Although Japanese companies had considerable success selling semiconductors, storage devices and other peripheral equipment in the

U.S. their efforts to crack the microcomputer and large-systems markets have fallen short of many peoples' expectations.

The Japanese share of the $40 billion American computer market, the world's largest, rose to 5% in 1983 from 3% in 1982, according to U.S. Department of Commerce figures. Looked at another way, IBM Japan still does as much business in Japan as all the Japanese companies combined do in the U.S. That modest gain in market share, however, came as Japanese imports of computers, peripherals and subassemblies to the U.S. last year rose 65% to $1.5 billion, creating a bilateral trade deficit of nearly $1 billion.

In general, the Japanese have not done that well in penetrating markets outside the Pacific Basin. Outside that region, they have captured about 10% of the information processing market. American computer firms still control about 75% of the computer market in noncommunist countries, according to International Data Corp. (IDC), a Framingham, Mass., market research firm.

Race for supremacy has just begun

Although the Japanese have definitely made their presence felt in certain segments of the American market, their overall progress has resembled more the slow and steady tortoise than the speedy hare that some experts had expected a few years back. But, then, some would say the race for computer supremacy has just begun.

"The Japanese are here today, but it's not in the way we all thought they'd be," said Matt Meehan, a computer industry analyst with Salomon Brothers, Inc. in New York. "They're here in the sense that they're supplying a lot of the peripherals. When you open up the guts of a computer, you see that a lot of it is Japanese-made."

With some exceptions, Japanese companies have been unsuccessful in marketing computer systems under their own brand names in the U.S. Most of their success has come through relatively less profitable original equipment manufacturing agreements or joint ventures with American firms. One such partnership is that between National Advanced Systems, Inc. (NAS) and Hitachi Ltd., in which NAS markets Hitachi's large-scale computers in the U.S.

If Japanese technology has caught up or surpassed American technology in many areas, then why haven't the Japanese been more of a force in the U.S. market? According to interviews with industry analysts, representatives of U.S. and Japanese computer manufacturers and others, the explanations include weaknesses in Japanese software, lack of American distribution channels, unfavorable market-entry conditions and cultural differences.

The list is long of U.S. manufacturers of IBM plug-compatible mainframes that have fallen by the wayside trying to compete against IBM's technical and marketing muscle: Magnuson Computer Systems, Inc., Storage Technology Corp., Spartacus Computers, Inc. and Trilogy Systems Corp. As their ranks have thinned, some U.S. manufacturers such as Amdahl Corp., NAS and Honeywell, Inc. have looked to the Far East for help in battling Big Blue.

Japan's three largest mainframe producers — NEC Corp., Fujitsu Ltd. and Hitachi — have all formed alliances with U.S. distributors to market their large systems. NEC has teamed up with Honeywell, Inc., Fujitsu with Amdahl and Hitachi with NAS.

'Japanese not copying anymore'

This increase in joint-venture activity is a clear sign of the growing sophistication of Japanese technology, said John Alic, a researcher in the U.S. Congress' Office of Technology Assessment and project director of the agency's 1983 study on international competition in the electronics industry. "The Japanese clearly are not just copying anymore," he said.

The NEC/Honeywell deal helps illustrate how things have changed in the computer industry. More than 20 years ago, NEC started selling Honeywell mainframes in Japan. NEC eventually began building its own hardware; today, its S-1000 mainframe is able to outperform Honeywell's top-of-the-line system by some 40%.

The U.S.-Japan partnerships have advantages for both parties. The American companies gain access to Japanese hardware that, according to most accounts, is at least as fast and reliable as IBM's. This allows U.S. firms to stay in the race with IBM and hold on to their large-system customers without incurring huge development costs of their own. The Japanese, on the other hand, are able to expand their worldwide installed base and gain a greater presence and recognition in the U.S.

Ed Shambo, chief operating officer of NEC Systems Laboratory, Inc., the market research arm of Boxboro, Mass.-based NEC Information Systems, Inc., said the requirements of his company and Honeywell "just fit each other." "NEC has hardware, but we don't have any software in the U.S., and we also don't have any sales or maintenance channels here," he said.

To date, however, these alliances have failed to wrest much market share from IBM. "It's pretty clear they are not a major participant in that area by any stretch of the imagination," noted Jack Hart, director of Pacific operations with IDC.

According to IDC figures for 1983, the total U.S. installed base of Amdahl/Fujitsu and NAS/Hitachi mainframes was 880. That compares with

9,500 mainframe installations throughout the U.S., 5,700 of which are IBM's.

But the American Electronics Association (AEA), the Palo Alto, Calif., trade association, views the Japanese advances in the mainframe market in another light. Ralph Thompson, the association's executive vice-president, believes the Japanese presence in the mainframe market is significant when cast in terms of bilateral trade, a subject of much concern to the AEA. "I think you'd be shocked to find that we've moved into, if not parity, then a negative" bilateral trade balance in the mainframe area, he said.

Nevertheless, some analysts believe the Japanese companies, helped by the sales and service arms of their U.S. partners, will continue to provide competition for IBM. "[The Japanese] are the only ones who are going to be able to compete against IBM in the IBM mainframe business," Salomon Brothers' Meehan said. "And they'll probably do it comely in the supercomputer business; but that's a niche market."

They market or not, the Japanese efforts in supercomputers have been viewed with concern by American computer companies and the American government.

This concern has been prompted largely by the significant military applications of supercomputers. Supercomputers also are being increasingly used for scientific and technical applications.

Japan's national supercomputer program has in its reported goal the development, by 1989, of a machine that would be anywhere from 100 to 1,000 times faster than the fastest American supercomputer that now exists — the Cray Research, Inc. XMP machine. Fujitsu recently became, through an agreement with Amdahl, the first Japanese company to begin marketing its supercomputers in the U.S.

The microcomputer market was one area in which the Japanese were expected to repeat the winning strategies they used to dominate the consumer electronics markets. It was only a matter of time, some predicted, before the legendary ability of Japanese manufacturers to turn out smaller, faster, cheaper and more reliable products would erase U.S. supremacy in this area.

Japanese micro troubles

But the Japanese micro invasion hasn't happened — at least not yet. Japanese vendors have captured only a 5% share of the U.S personal computer market, according to Future Computing, Inc. a Richardson, Texas, market research firm.

However, when Japan's 36% share of the U.S. peripherals market is taken into account, Japan comes in with a 22% share of the total U.S. personal computer and peripheral market.

Much of the Japanese success in this area has been in home computers and portable computers rather than in business systems.

Among the commonly cited explanations for Japan's less-than-glittering performance in personal computers are a lack of software, inadequate avenues of distribution and a general failure to understand the American market.

Asked to compare his company's success in televisions, videocassette

recorders and stereo equipment with personal computers, Kazuya Hanabuzaka, a spokesman for Hitachi Ltd. in New York, said: "In the other areas, it didn't require any software for us to be successful."

But some suggest that software may only be a temporary Achilles' heel for the Japanese. Hanzuka noted, for example, that Hitachi has more than 20 software houses in Japan that are developing programs for personal computers, robotics and other applications.

"It is almost unknown to American companies, but almost every week a new Japanese software house announces that they will export software from Japan to the U.S.," said John Stern, senior representative in the AEA's Tokyo office, which opened this year.

"While [noncustomized] Japanese

software is not as deep or broad as U.S. software," Stern added, "in certain areas it's very good and fully competitive."
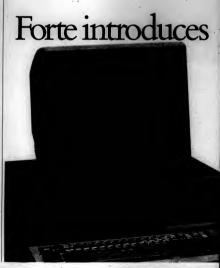
Some observers suggested that the Japanese companies are taking a cautious approach, waiting for the dust to settle in the micro shakeout.

"Every textbook or Harvard Business School case says this: The Japanese wait until the market matures, until there's stabilization, and they can move in and make things smaller, better, faster, cheaper," said the Salomon Brothers' Meehan. "We haven't gotten to that point yet, and I don't know if we'll ever get to it."

Wait-and-see strategy

Marketing is cited as another weakness in Japan's personal computer strategy. "I don't know of any Japanese companies that are starting

from a marketing-oriented approach, a customer approach," noted Leslie Latham, a former U.S. marketing executive for microcomputers at a leading Japanese electronics company. "They still have not learned that the reason why companies such as IBM have been successful is not because they have a superior product, but because they have been concerned with the customers' needs."

For that reason, some Japanese companies have again sought out American partners to provide sales and service. Mitsubishi Electric Co., for example, has signed private-label agreements with both Sperry Corp. and Leading Edge Corp. to market its IBM Personal Computer-compatible business computer in the U.S.

One company representative contended, however, that the Japanese have not failed in the personal com-

Forte introduces

Worldwide imports of computers and computer-related products to U.S.

These figures include U.S. shipments of computing equipment from U.S.-based manufacturers. Also included in these figures is computer equipment shipped by U.S.-based subsidiaries of foreign vendors. (SIC data) U.S. Department of Commerce data

puter area, but instead have been patiently following a carefully planned business strategy. Ed Schaider, director of marketing for Fujitsu's Professional Microsystems Division, which sells the Micro 16 business computer in the U.S., explained his company's strategy for entering the American market. He said the company waited for the market to mature, identified a specific segment of that market, provided a "very high-quality" product and an "unusually high level of vertical integration.

"Fujitsu will continue to watch the U.S. marketplace," Schaider said, "and as it matures, you'll find Fujitsu."

No one can say for sure when or if the Japanese will make a major move into the microcomputer market — or what niches within that market they

will target. But one thing is certain: It's too early for American companies to relax.

"These are huge companies with tremendous resources, and they're going to be around for awhile," said Peter Teige, a Dataquest analyst. "They don't need to take any drastic measures to move into the U.S. market. . . . In the next several years, they will keep the pressure on and try and make something happen. Their track record in everything else seems to indicate they could successfully do that."

If there is one area in which the warnings of Charles Sporck, National Semiconductor Corp.'s president and chief executive officer, have come to pass, it is in semiconductors.

"The Japanese are doing very well. They are making steady market-share incursions," said Michael Gumport, an analyst with Paine Webber, Inc. in New York.

The Japanese share of the U.S. semiconductor market has been growing steadily. According to the Semiconductor Industry Association, a San Jose, Calif. trade association, the Japanese will have risen to 14% of the U.S. market in 1984, up from 13% in 1983 and 10% in 1982. Gumport, however, said his data shows the Japanese market share will hit 16% to 18% in 1984.

Worldwide, the Japanese are said to have captured about half of the 64K-bit random-access memory (RAM) market and most of the emerging 256K-bit dynamic-RAM market so far. Gumport said the Japanese should have about 40% of the world market for 1984, up from 34% two years ago.

The U.S. trade deficit with Japan in integrated circuits ballooned from $327 million in 1982 to $481 million in 1983. Commerce department figures show that the U.S. imported $481 million in integrated circuits from Japan in 1983, compared with $440 million in 1982. U.S. exports to Japan totaled $300 million, up from $119 million the year earlier.

U.S.-Japan business scaling

The trade battle between U.S. and Japanese manufacturers has been one of the hottest in the computer industry. Yet despite the U.S.' negative trade balance and continuing complaints from American companies that Japan is not allowing access to its domestic market, tensions overall seem to have cooled.

Sheridan Tatsuno, an analyst with Dataquest, attributed the easing trade tensions to the growing internationalism of the industry. U.S. and Japanese vendors have set up chip-making plants in each other's countries, in Europe and elsewhere. Moreover, U.S. and Japanese cross-licensing and second-sourcing agreements are on the rise. "It's gotten to the point now that if you don't have a partner, you don't survive."

The change Tatsuno refers to is evident in the 1983 agreement between Oki Electric Industry Co. and National Semiconductor Corp., a company for which such a deal would have been unlikely several years ago. National Semi signed a second-source pact with Oki under which the U.S. firm manufactures 64K-bit RAM chips based on Oki designs.

"It's pretty simple," Tatsuno reasoned. "If you have a [foreign] partner, it's not nice to bash their country."

THE JAPANESE

Price, performance beat patriotism in machine choice

While mulling over a computer system change a few years back, National Can Corp.'s chairman and chief executive officer raised a question: Should we buy from an American company whose products are partially made by a foreign firm and whose ownership is part foreign?

National Can had already seen one U.S.-Japanese partnership turn sour. The company was using a TRW-Fujitsu Co. TFC-8510 series computer, when Fujitsu Ltd. bought out TRW Corp.'s share of the venture and pulled the series from the market.

Despite some concerns, the Chicago can manufacturer eventually decided to purchase a system from Amdahl Corp., a company in which Fujitsu, Japan's No. 1 computer maker, has nearly a 50% interest. Fujitsu makes almost half of Amdahl's 580-series machine and also markets its own supercomputers through the American company.

Donald Brungard, MIS director at National Can, said

he would prefer to buy from a vendor whose products are primarily American-made. But "when push comes to shove," he explained, the company will deal with a foreign vendor if the price/performance criteria are right.

"At our company," Brungard said, "costs are so important that what we say in,

'Let's go look at the market, find the best technology and see what the prices are. If there are no dramatic differences in technology, then it doesn't matter where it comes from."

"In the Amdahl system, we were buying such additional horsepower that we could demonstrate it would last at least one year longer and . . . would mean a substantial savings above and beyond IBM, for instance," he said.

Other MIS managers, who in recent interviews were asked their thoughts on Japanese equipment, offered views similar to those ex-

'We really don't care who it's made by as long as we get a good box that will perform well.'
— Glenn Broom, MIS director, Acme Boot Co.

pressed by National Can.

"We really don't care who it's made by as long as we get a good box that will perform well," said Glenn Broom, MIS director for Acme Boot Co. in Clarksville, Tenn. Acme Boot has an Amdahl 470V/5-11 system. Broom said some of the components of the Amdahl system are made by Fujitsu.

The computer center at the Federal Bureau of Investigation includes systems from a variety of vendors, including IBM and National Advanced Systems, Inc. (NAS), a Mountain View, Calif., company that markets computers made by Japan's Hitachi Ltd.

"My personal feelings are that it doesn't matter to us whether [the computers] are from an American or foreign company," said Kier T. Boyd, deputy assistant director of the FBI's Technical Services Division. "We're very satisfied with our NAS systems."

Henry Kee, vice-president for personal computing at Chemical Bank in New York, said he has not seriously considered the business computer offerings of Japanese vendors because of what he called their lack of software and inability to integrate with other office system products.

Kee claimed the Japanese have been too late in responding to the rapid changes in the American micro market. "If you look at some of the CP/M [operating system] machines offered today by many of the Japanese manufacturers," he said, "they are very high-quality, excellent for the dollar, but no one cares anymore."

BORN AGAIN

By James Connolly

The title is manager, as in business executive, administrator or director. Telecom is just that manager's specialty.

Certainly, the telecommunications manager of 1985 needs experience with — and an understanding of — communications. But the successful telecommunications manager will be one who optimizes management skills such as analysis, planning, human relations, marketing and accounting — not the one who sells an ability to reroute a private line.

"This isn't the techie manager anymore," observed Gary R. King, manager of telecommunications for Gillette Co. in Boston. King, other telecommunications managers and consultants spoke of how the role and the makeup of the telecommunications manager are changing in American business.

They spoke of the demands that the breakup of AT&T, the integration of voice and data communications, the emergence of new equipment and service vendors, a population explosion of personal computers and technical breakthroughs have placed on the telecommunications manager.

"In general, the telecommunications manager of the future is going to be a very new type of animal, a very different

Long-distance voice communications costs still eat up the largest portion (51.8%) of a telecommunications manager's budget, according to a survey of 200 large organizations.

Continued from page 85

person. The [focus] is shifting to a definite business manager emphasis. That should be complemented by a fair amount of technical expertise but at the conceptual level rather than at the bits and bytes level," King noted.

While many organizations do not have someone carrying the title of telecommunications manager, many do have an executive who fits into that general role — a person responsible for buying private branch exchanges and protocol converters, coordinating a nationwide network of private lines, planning for corporate headquarter telecommunications and cutting communications costs.

That person must be able to judge new technology and assess the risks and benefits for a multinational corporation.

That person may have climbed the ladder in telephony or MIS or may have come from the administrative side of the corporation.

The time may vary, but the essential assignment remains the same — to let the terminal access the mainframe, the mainframe talk to the micro and the boss' telephone in Dallas reach out to touch the district manager in Coeur d'Alene, France.

"What I see as really helpful are basic administrative, management skills with experience in design and system analysis and a good mathematical facility. A good number of things that we are doing depend on analysis and statistics. A degree in electrical engineering would be helpful, but I know very few people who have that," said Seth Lewis, project manager for voice communications at Stone Insurance Co. of New York.

"There is much more involvement in the data network as it becomes more widespread and more sophisticated. It used to be that if someone wanted a line from New York to Los Angeles, you just called to order it, and a few weeks later it was in. You can't do that any more. Since the AT&T breakup, it isn't that simple. The transmission networks have proliferated extremely rapidly in the last year or two, and it is tough to keep up-to-date with the tariffs and with what you can or can't do," Lewis added. Lewis' responsibilities include coordinating headquarters voice communications, as well as purchasing and planning field office telecommunications equipment and purchasing data communications equipment for headquarters.

Personal computers mean increas-

ing demand for ports to mainframes and for the ability to communicate with other personal computers, said Frank Naddeo, a senior engineer for Southern California Transit in Los Angeles.

"I think everyone is aware that there is a continuing acceleration of the business. Things are happening at a faster rate. I don't see any easing of that, at least not completely, for 10 to 15 years downstream when the technology might start to level off," Naddeo said.

"Telecommunications is coming out of the closet," King added. "It is no longer going to be a cost center and an expense to be put up with. In some companies, it is even going to be a strategic asset."

Running a communications department now calls for a proactive approach, observed Chuck Hlavac, telecommunications manager for Crowley Maritime Corp. of San Francisco.

"At some large companies, they have 19 or 20 people doing nothing but planning. They are looking three years ahead. In the past, it was always a reactive situation. You want to be able to get a handle on things so you can control them," Hlavac said. He said that he hopes his planning can save $250,000 in a department with a $4 million budget.

King added, "The next three to five years essentially will be an era of opportunity for the telecommunications managers to make their mark, and I think that those who work for corporations that see telecommunications as an asset will be integrated into the decision-making process and will contribute to the businesses' strategic planning."

But that type of manager may be hard for a company to find, which translates to a comfortable financial position for those who qualify.

Managers and consultants estimated that a telecommunications manager's salary ranges from $40,000 to $100,000, depending on the size and location of the company and its degree of reliance on telecommunications. A Fortune 500 firm that is heavily dependent on communications and located in a costly city such as New York would pay the highest.

There also is room for career growth.

"I think you will see the telecommunications manager moving up the ladder in organizations very consistently now. You will see them having

Continued on page 90

Introducing the TeleVideo Personal Mini.
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THE COMMUNICATIONS MANAGER

Self-education a job for communications managers

Vendors, trade journals and seminars are the key means for telecommunications managers to learn about and to stay on top of what is happening in their field.

But each of those sources provides only one mere lot of information that goes into the decision-making process when a telecommunications manager is shopping for a product or setting a policy. The information process is largely one of self-education, according to telecommunications managers.

"I read out of data communications for several years, so it was a problem for me when I took this job. You lose track of things. I was forced to grow, to learn more in the data

communications area," said Chuck Hlavac, telecommunications manager for Crowley Maritime Corp. in San Francisco.

Hlavac noted that IBM's Systems Network Architecture/Synchronous Data Link Control protocol and AT&T's Digital Data Service had largely developed during the seven years he worked on telecommunications for another company. Hlavac recently invited a data communications specialist to address a class that he teaches in Golden Gate University's graduate telecommunications program. "I sat in the back of the room and learned in my own class," he said.

Several managers noted that ven-

dor sales representatives are helpful not only in promoting their own products but in helping managers understand concepts and communications issues.

They also said they and their staffs attend career training seminars, which may be held in their own facilities for a group of employees or at conference centers with staff members from a dozen or more companies in attendance.

One consultant who teaches communications seminars to people entering the field from both the telephony and DP ends of the business said his biggest challenge is making traditional DP workers understand that communications is bringing DP

out of the computer room.

"We have to get them thinking in terms of a network, the communications cloud out there, instead of a box," said Ben Chillemi, of Zatyko Associates in Tustin, Calif., which runs seminars for Data-Tech Institute of Nutley, N.J.

Meanwhile, several managers said graduate school-level training is missing, with few colleges offering degrees in telecommunications.

"I'm amazed that the universities seem to have almost totally neglected telecommunications as a field. I think it may be because they see it as too application-specific," said Frank Haddon, senior engineer for Southern California Rapid Transit.

Hlavac noted that even the existing programs, such as those at Golden Gate, New York University, the University of Colorado and George Washington University, tend to approach the field from different angles. He said some schools may take engineering-oriented tracks and others management tracks. Those differences approaches lead to sharp inconsistencies in how much potential managers know about the varied aspects of telecommunications.

No consensus on favoring voice vs. data

Who gets ahead in telecommunications? The voice specialist? The data specialist? Neither?

There was no consensus among telecommunications managers and consultants interviewed by Computerworld, but all agreed that the telecommunications manager of the future will approach the information exchange process as a single entity — not as voice or data communications — and will think in terms of what is best for the organization, not a single department.

"The guy who was a programmer and is now the MIS manager, just trying to hold his bits and bytes together — he's in trouble," said Ben Chillemi, a Tustin, Calif., consultant. "From the seminars I teach, the guys who have a voice background have a clearer picture of how information is moving around out there."

Stephen J.L. Page, president of Page-Wheatcroft & Co. Ltd., an executive search firm in Dallas, said technicians from both sides will lose out if they do not concentrate on the job's management aspects.

Seth Lewis, project manager for voice communications at Home Insurance Co. of New York, concurred. "Neither has the advantage. If someone has totally stuck to the voice side or the data side, they run the danger of being too limited. The edge goes to the person who has some knowledge of the other side as well. If you had to choose between just those two, then it would be a toss-up on their management skills," Lewis said.

Price war looms on telecommunications horizon

No major technical breakthroughs are likely in communications during 1985, but watch for a long-distance price war.

That warning came from one of several telecommunications managers and consultants asked for their thoughts on what will happen and what they would like to see happen in the coming year. "In 1985, we will see a long-distance price war really get rolling. AT&T will use predatory pricing as much as it can get away with. I suggest that telecommunications managers keep their powder dry, keep their commitments short-term and exploit the price wars," said one observer, who asked to remain anonymous.

Frank Haddon, senior engineer for Southern California Rapid Transit in Los Angeles, noted,

"A magic lantern would help. I don't know of a single thing that would make life that much easier. Protocol conversion is a headache at this time, but I know that five years from now we will have black boxes that will take care of it for us."

Gary King, manager of telecommunications for the Gillette Co. in Boston added, "I want true compatibility among workstations, networks, modes and all devices. They just aren't as compatible as the vendors promise. I think that would be the single most important thing in helping me to do my job. I also believe that that is unattainable. The major vendors will avoid it. It's just not in their best interest."

King predicted that in 1985 more vendors will

keep some of the promises that they have made in recent years about their products' capabilities and said that he hopes the Federal Communications Commission will establish a policy on local bypass. Chuck Havrec, telecommunications manager for Crowley Maritime Corp. of San Francisco, said he hopes more companies confide in their telecommunications managers when making major corporate decisions.

He noted that a company planning an expansion or relocation should remember that a private-branch exchange installation or other major project takes many months of planning and study and work and that the telecommunications manager not only needs warning of a move but can help to make the corporate decision.

Continued from page 96

peer status with the traditional data processing executive, and it won't be unusual to see them reporting to the senior vice-president for operations, two steps below the president," said telecommunications consultant Dixon Doll, president of the DMW Group, Inc. in Ann Arbor, Mich.

Doll said the rewards for making communications an asset could include a promotion to officer of the company and a salary in the $125,000 to $150,000 range.

Telecommunications manager profile

Stephen J.L. Page, president of the Dallas executive search firm Page-Wheatcroft & Co., specializes in finding telecommunications personnel. "Corporate America and the Fortune 1,000 companies are going to be demanding more and more sophistication from their telecommunications managers," he said. "We are seeing a greater trend toward lumping all of the functions relating to office automation into telephone and data communications and integrating them under one corporate manager. These are real [profit-and-loss] managers, and they are going to have to be business people first," Page said.

Page painted the profile of a telecommunications manager as a person in his late 30s or early 40s with a knack for managing a business unit and the ability to develop a peripheral technical knowledge during about 15 years of pragmatic experience. The person may be a "techie" but must show other business management skills.

"There will be a shortfall of talent for years to come because the technology is changing so rapidly. [Telecommunications managers] have a rosy, dynamic future. The operational savings they can identify by having a well-run communications department can make them very valuable," Page said.

Page said the telecommunications manager can rise to executive vice-president on the strength of an overall knowledge of how the company operates.

Doll, however, warned that telecommunications managers are in danger of being barred from the president's office because they do their jobs too well. He said that once they establish themselves in communications, they may be too hard to replace and too valuable to move laterally into the financial or administrative positions where they need to acquire experience in order to qualify for the top corporate job.

WHAT'S HOT

WHAT'S NOT

By Charles Babcock

In an age when breakthroughs in microcircuitry technology are taken for granted, MIS managers are spending little time worrying about hardware and instead want to know where to find good people or how to set up their own communications systems.

They know processing power will be there when they need it, and chances are, the cost per millions of instructions per second will be less than it was the last time around. So they are talking instead about how to treat their users' "on-line fever" with better micro-to-mainframe connections.

Fourth-generation languages are hot as a watercooler discussion topic, but when it comes to embracing one — a move that threatens upheaval of one kind or another — the conversation cools.

AT&T's Unix operating system doesn't particularly interest MIS managers. Sooner or later, it will probably appear somewhere in their operations, "but we'll wait and see what happens to Unix in the marketplace," said one

New York investment house MIS director.

Even if Unix is hot in some quarters, relational data base management systems, despite their great flexibility, are not. MIS departments have a heavy investment in their existing data base management systems (DBMS); the relational models are too time-consuming for shops that are involved in daily data collection and information flow.

But without a doubt, the single most important topic to MIS departments is the growing role of microcomputers and the resulting demands on the departments.

"Our hot button right now is promoting end-user computing," said Michael Leciuk, manager of systems and service for Exxon Corp. headquarters in New York.

Micros 'proliferating like rabbits'

"Microcomputers are proliferating like rabbits," said a vice-president for MIS at a New York securities firm.

"We're training over 100 people a month. It's just booming," said a project manager at a Princeton, N.J., firm's information center.

Microcomputers are tied to another pressing topic at many firms — strategic planning. By examining changes in their customer base, analyzing sales data and simulating potential products, banks, brokerage firms and other information-rich businesses can gain a competitive edge.

Another hot topic is the pursuit of people proficient at short-distance data communications or long-distance telecommunications.

With all the demands from microcomputer users for data, MIS managers are having to make the mainframe-to-micro connection and do it in a way that doesn't allow a breach of security. The people in short supply include experts in communications protocols and telephone systems, said John J. Davis, president of Worldwide Computer Services, Inc. in Wayne, N.J., a firm that places temporary engineers and programmers at AT&T and other companies.

Economic recovery drains labor pool

The economic recovery has soaked up the available supply just as many new communications jobs have been created by AT&T's breakup. Exxon's headquarters are in Manhattan, N.Y., but its information systems center is in Florham Park, N.J. It is setting up its own microwave telecommunications link, a task that in the past would have been handled by AT&T.

"You can take on as much of the responsibility as you want today," Exxon's Leciuk said.

Another shortage of people exists at the systems programmer level.

"There are few good people out there with experience, and you have to pay top dollar to get them. They can practically name their own salary," said Frederick W. Kern, vice-president of information processing at the insurance brokerage firm of Marsh & McLennan, Inc. in New York.

"The demand is greater than the supply and it appears to be growing," Davis said. Even doubling Worldwide's finder's fee to $2,000 hasn't helped, he said.

Fourth-generation languages are being embraced eagerly at a few MIS

Richard Sherlund   John J. Davis   Frederick W. Kern

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WHAT'S HOT/WHAT'S NOT

shops, but for the most part, the harried MIS manager, with its many demands already on his agenda, wants nothing to do with them. The two phenomena are closely related, industry observers say.

To adopt a fourth-generation language, an MIS manager must find one that fits his needs, retrain programmers to use it and then begin to convert Cobol programs to it. Given a backlog of applications requests, he rarely feels he's got the time to make the switch.

But fourth-generation languages offer one of the few hopes of reducing the applications logjam, industry observers say.

"If people insist on using Cobol, we will continue to have a two-year applications backlog," said Richard K. Sherlund, software analyst at

Goldman Sachs & Co. in New York.

A recent Sherlund research report included a James Martin chart showing people costs had outstripped hardware costs in the 1980s.

Adopting fourth-generation languages would permit "a new mindset," noted David Dell, director of the Diebold Group Research Services. "We don't have to build software to last forever in order for it to have value. We might want to design software to make it easy to adapt and reuse," he said.

Nevertheless, most MIS directors remain unenthusiastic. They say fourth-generation languages are well-suited for end users, who will need less assistance from the MIS department if they have an easy-to-understand syntax.

"End-user computing is more into fourth-generation languages than we

are," one MIS director said.

Among end users, the integrated software packages, such as Lotus Development Corp.'s Symphony and Ashton-Tate's Framework, which were hot topics a year ago, are heavily warm now. They are "a bit like the Swiss Army knife," Goldman Sachs' Sherlund said. "They combine so many functions that they don't have the utility of a stand-alone."

Meanwhile, Lotus' 1-2-3 still warms the hearts of users; it is outselling Symphony three to one. They like its simplicity compared with the integrated packages, Sherlund said.

In the realm of prediction, several observers said they expect Cmos chip technology to play a more important role in 1985 and beyond. Complementary metal oxide silicon is slower switching than bipolar chips, but it uses less power and has a greater concentration of transistors.

"IBM will come out with Cmos technology in some product in 1985, probably somewhere in their 30 series lineup," predicted Frederic H. Cohen, an analyst with L. F. Rothchild, Unterberg, Towbin in New York.

Many MIS directors are intrigued by the prospect that an optical storage system will soon concentrate their tape libraries onto a few disks. In places like Manhattan, that could be a significant square-footage gain. The one manufacturer prepared to bring out a product, however, Storage Technology Corp., has filed for protection from its creditors under Chapter 11 of the Federal Bankruptcy Act.

The Louisville, Colo., tape and disk drive manufacturer has designed a 4G-byte, 14-in., write-once videodisk with a 3380-style controller. "It was the only end-user system that we had any hope of [seeing] offered as a product," noted James N. Porter, president of Disk/Trend, a market research firm in Los Altos, Calif. (Japanese manufacturers are offering optical storage drives — both erasable and read- or write-only units — to OEMs.)

'Still too much paper'

A product that MIS managers would like to see brought to market in 1985 is a multifunctional workstation that combines computing with communications and allows a mainframe-to-desktop link. "I would like to see word processing, electronic mail, voice mail, spreadsheet, windowing and standard calculating capability in one unit," said Robert W. Woodrow, senior vice-president at Bank Leumi Trust Co. of New York.

The MIS managers in the securities industry wonder why no one has designed a software package that allows a stockbroker to perform all his functions on a desktop unit. Such a personal computer system would preferably be lightweight and portable, so brokers could demonstrate financial calculating at clients' offices, said Stephen S. Boguszewicz, systems vice-president, data, at the Pershing Division of Donaldson Lufkin & Jenrette, Inc. in New York.

Although few MIS managers contemplate buying one, they are keeping an eye on the race to build supercomputers. The Japanese are making great strides in this area, but Cray Research, Inc. of Minneapolis still maintains its lead, they say. Cray has said it will launch the Cray 2 early in 1985 and begin work on the Cray 3.

GLOBAL MICROS

By Susan Blakeney

AROUND THE WORLD IN 16K

W hat has grown 20 times in size since 1980?

Q: What country is devouring low-end technology faster than any other?

Q: What were the names of four 1984 fiscal casualties of the roller-coaster microcomputer industry?

Q: What key issues will concern the corporate personal computer user in 1985?

A: The personal computer industry.

A: The Netherlands.

A: Franklin Computer Corp.; Victor Technologies, Inc.; Gavilan Computer Corp.; Otrona Corp.

A: Networking, communications capabilities, compatibility, security.

In light of its explosive growth and monstrous sales potential, vendors hardly consider the international personal computer marketplace a trivial pursuit.

At the same time, users around the world are often left guessing over a myriad of choices, compatibility ma/so and operating system decisions. The game is complicated further by the relatively recent entries of IBM, AT&T and ITT, which have made their presences felt like that of King Kong at a cricket match.

Because most microprocessor-based technology is born in the U.S., international users have traditionally been shackled with more problems than their American counterparts. Obstacles include strict import restrictions, such as those in Mexico and Eastern Europe; heavy tariffs like those in India and the Middle East; home market reservation policies, such as in Brazil; high shipping costs; long-distance support; and language barriers. The personal computer has not invaded foreign offices as deftly as it took American offices, and the foreign marketplace is just lifting off now.

A recent survey Computerworld conducted, along with research compiled by International Data Corp. (IDC) of Framingham, Mass., and the Paris-based Intelligent Electronics research firm, all indicate that a voracious vendor community is sparring on eager market, which in turn is displacing user resistance.

IDC predicted that "the personal computer has the capability to become as important in most individuals as the calculator. This implies that an individual may own more than one [personal computer], and in fact, is quite likely," it contends. "Judging from market forecasts, this appears to be a valid claim.

In the Netherlands, for example, the personal computer market is expected to grow by a staggering annual rate of more than 50% in the coming years, which will result in an installed user base of 250,000 micro units by 1988. In Spain, the market is anticipated to expand by 50% in 1985. In Australia, surveys indicate the market is projected to increase by 30% in 1985.

Not only is this exciting for vendors all over the world, but also great news for users, according to the collective research. More than ever before, users can look forward to high availability of systems in their respective countries. They can also expect prices to stabilize or fall as competition grows increasingly ferocious over their personal computer dollars. Likewise, they can expect such services as training, installation, special software and so on to sway their purchasing decisions.

Suppliers also appear to be paying more attention to foreign users' individual needs, and studies reveal this emerging trend will gain momentum during 1985 as vendors vie to stay in the microcomputer race. Vendors will distinguish themselves by offering their customers the networking and communications capabilities they've been begging for. In other words, personal computer users can look forward to more responsive vendors. But currently, micro users abroad bear a striking resemblance to users in this country a couple of years ago.

Most countries import almost all of the hardware and most 95% of the software. The most popular applications packages overseas include Lotus Development Corp.'s 1-2-3 and Symphony; Software Arts, Inc.'s Visicalc; Micropro International Corp.'s Wordstar; Ashton-Tate's Dbase II and Framework; and Microsoft Corp.'s Multiplan. The remaining 5% of the software is locally produced. This category includes special tax preparation packages to meet individual country requirements and other customized applications, ac-

cording to the surveys.

At the same time, in Spain and in several other smaller countries, according to the Computerworld survey, "professional applications are often carried out with modest sometimes considered to be toys in the U.S. . . . such as with the Commodore 64 and the [Apple Computer, Inc.] IIe. This is partly because microcomputers cost almost twice as much in Spain as in the U.S."

The IDC survey also revealed, "The sharing of corporate personal computers will increase, especially as multitasking operating systems continue to remain a fairly small percentage of the market. [Personal Computers] are used primarily for one or possibly two tasks, and the [Personal Computer] is generally used less than eight hours per week. [Therefore,] a single system can sat-

isfy the demand of multiple potential customers. This will be a short-term phenomenon."

As in the U.S., purchase decisions for microcomputers are being handled for the most part by data processing managers in large foreign corporations. This is especially true if the user wishes the personal computer to communicate with the corporate mainframe. In small- and medium-size companies, executives and managers often make up their own minds on what to buy and sometimes look to a local consultant or expert for advice.

Unlike in the U.S., the concept of the corporate information center has not caught on very well overseas. Everyone surveyed on this subject tentatively reported that in their country, there were only a few full-grown information centers. At the

same time, the research from Europe indicated that "there is a lot of talk going on on this subject."

In several countries, time-sharing services were viewed as a more cost-effective processing solution. In general, though, the research concluded that more than 95% of all personal computers abroad are used in standalone environments.

Intelligent Electronics' research revealed, "In the UK, 30% of companies surveyed have connected at least one of their [personal computers] to a data base. A similar percentage is observed in West Germany, although a much larger proportion of these connections are to internal data bases rather than outside. France is very retarded in this field, with only 9% of the companies having data base connections."

European micro sales put Osborne back into the black

One of the most colorful stories in recent microcomputer history is the saga of Osborne Computer Corp., which sank to financial depths, filing under Chapter 11 of the Federal Bankruptcy Act in 1983, but, largely on the coattails of its international sales, rose from the near-dead this year.

Dave Miller, vice-president of sales and marketing, explained how Europe carried the American computer manufacturer out of the red and back into the black: "There were a lot of facets to the recovery, but the cornerstone to our revival was our ability to rely on the strength of our international distribution," Miller said. "In 1984, for example,

80% of our sales were international."

While things were going sour at home, Osborne's international customers remained bolstered from the bad news, Miller claimed. "The international dealers remained loyal to Osborne and passed the company's financial problems. And there were financial problems — there was never anything wrong with the product.

"Anyway, dealers stayed with Osborne because they had faith in us. This is partially due to the fact that, unlike U.S. dealers, they can't change product lines quickly. They invest a lot of time and money and people to develop a product line and then stake their reputation behind it. Their reputations are extremely im-

portant to maintain."

"In Norway, for example, we are the No. 1 microcomputer vendor. This is because users can get an Os-

borne with a Norwegian keyboard, a Norwegian character set, Norwegian documentation and Norwegian software. Furthermore, there are not very many domestic personal computer makers in Norway — and certainly none in our price range," he noted.

Miller said the bulk of Osborne's customers overseas are small businessmen who use a single system or sometimes clusters of microcomputers to run their businesses. "The typical users will buy one system for the office, and everybody will share it."

But just what does the future hold for the personal computer user? According to Miller, good things.

"I think we may be entering a new era in which computer suppliers are going to attempt to get very close to users and their needs. The major vehicle is user group activity," Miller theorized.

Security a pressing issue

As for new products to expect, Miller said, "It's obvious that users will see a lot more communications-intensive products . . . and I think security — access availability and data integrity — is among the most pressing issues right now being addressed by communications people. Expect new and exciting breakthroughs in that area."

On the industry in general Miller said, "The world will not be dominated by — at least not the micro industry — a giant or two. New companies such as Osborne will work together to succeed.

"You do not have to become a giant to bring new and innovative products to the market. . . . That is what users can also be happy about. Traditionally it's been the small companies that have brought new things to the world, and I believe that trend will continue . . . more so in the microcomputer industry than anywhere else."

All parties surveyed unanimously agreed that IBM's market penetration with its personal computer product line has not met with the vendor's own great expectations. The IBM PCjr has not even made an appearance in most foreign companies surveyed and is not expected to in many countries.

IBM's slice of the world micro market during 1983, in the business and professional sector, hovered slightly above 35%, trailed by Apple Computer, Inc., Tandy Corp. and Osborne Computer Corp. In the European countries, where IBM has yet to win a significant professional user base, many respondents ascribed to the belief that IBM will eventually dominate.

The main conclusion, in fact, of the Intelligent Electronics research was that IBM Personal Computer users all over the world enjoy "a high level of satisfaction" with IBM personal computers and a "high level of confidence" with IBM as a company. They believe that IBM can best serve their immediate needs "in terms of product quality and responsiveness" as well as their future needs "in terms of evolution of their companies and their subsequent computer requirements."

DESTINATION UNKNOWN

By Bryan Wilkins

Like the U.N., the world of office automation and data processing users wants to believe that the vendors and companies supplying them are making efforts to make interconnection an easy thing. While most vendors claim to support the International Standards Organization's (ISO) seven-layered Open Systems Reference model for communication between dissimilar de-

vices, the reality of the situation is far from peaceful.

At a Dallas conference earlier this year, a plea from a user, a DP supervisor at a petroleum company, affirmed the confusion users face when trying to link systems where there is no compatibility.

Addressing a panel of vendors at Intech '84, which includ-

ed Joseph Debiasio, IBM's director of
standards, Romeo Matta, a Phillips
Petroleum Corp. control supervisor
said, "You are asking us to jump on a
train you built, run to the front and
guide it for you, and we don't even
know where you are going."

Other vendor members of the pan-
el tackled Debiasio when he voiced
support for the seven-layer open sys-
tems integration (OSI) reference
model for communications as adopt-
ed by the ISO.

"OSI will govern all future devel-
opments," Debiasio asserted. "It is a
very, very important part of [IBM's]
product development efforts."

Al Mallinger, director of product
strategy for Datapoint Corp., chal-
lenged Debiasio's statement, citing
IBM's release this year of a link
product for the Personal Computer
AT that does not follow the OSI mod-
el but rather is based on coaxial
cable technology.

Standards help compatibility with IBM

Debiasio said that standards such
as OSI are making it easier for users
who do not have IBM equipment to
connect into the Big Blue environ-
ment.

The dominance of IBM in the mar-
ketplace and the unavailability of
usable communications links to the
IBM environment have helped solidi-
fy customers' conviction that only
chaos exists when it comes to stan-
dards.

However, standards as formulated
in lengthy sessions of working
groups under the auspices of the
American National Standards Insti-
tute (Ansi) and the IEEE, Inc., which
recently completed four years of
work in its 802 committee on local-
area network standards, are much
different from the de facto standards
that the dominant computer concern
— IBM — creates by its ubiquity.

Instincts, not standards, followed

Due to the bloodletting competi-
tion in micro markets, the develop-
ment of micro-mainframe links also
is not following standard formats
but rather follows the creative in-
stincts of software engineers and in-
creasingly, communications compa-
nies.

Progress was made in 1984 on
standards for local-area networks.
The IEEE 802 committee on local-
area networks and its five subcom-
mittees have completed their work,
and the draft standards are current-
ly undergoing publication.

The 802.3 committee has complet-
ed standards work on the carrier-
sense multiple access-collision detec-
tion (CSMA-CD) architecture, which
reportedly have already been adopt-
ed by the U.S. government as federal
information processing standards.

The 802.4 committee has complet-
ed its work on the token-passing bus
architecture for local-area network
communications, and the 802.5 com-
mittee has completed work on the
token-passing ring architecture that
has been embraced by IBM as the
standard of choice for its future uni-
versal communications systems.

In the estimation of Bert Stanley,
the IEEE's deputy staff director in
charge of standards, the significance
to the user of the publication of lo-
cal-area network standards for the
various technologies is this: "After
four years, there will be more uniform-
ity in the way the materials [stan-
dards] are applied. In the past, peo-

ple have taken versions of the standards and interpreted them their own way. There should be less of that, Oskerbuu, not much else will happen outside of the broad availability of the information."

Stanley voiced the prospect that, because technology is changing so fast, parts of the work already done by the 802 committees will soon have to be revised to accommodate new applications.

"There will be substantial changes in the requirements as the state of the art matures," he said, adding, "It is rare that standards remain standard."

However, the IEEE 802 standards for CSMA-CD, token bus and token ring have all been submitted to the ISO in Geneva as draft international standards.

Another area of standards promulgation that will affect users in the future concerns the publication this month by the Ansi X12 committee of a draft Business Data Interchange (BDI) standard that will cover an interindustry standard for order forms, purchase invoices, orders.

> 'There will be substantial changes in the requirements as the state of the art matures. It is rare that standards remain standard.'
>
> Bert Stanley, IEEE

der placement and shipment and receiving information. The Transportation Data Coordinating Committee, based in Washington, D.C., is the administrative secretary for implementation of the BDI standard.

A relatively recent addition to the standards arena is the formation, under the auspices of Ansi, of the T1 committee. This committee has as its charter the formal connectivity and interoperability of the public communications network that was necessitated by the divestiture of AT&T a year ago.

Under the chairmanship of Ian Lifchus of Bell Communications Research Corp. in Parsippany, N.J., T1 has "already extended by 2¼ times the size of Ansi's X3 committee on information processing," according to Lifchus. The committee is working toward universal connectivity to the network.

Under T1, 25 working groups have been formed, dealing with the esoterics of protocols, maintenance issues, ordering standards and building systems.

Equal access standard a main objective

Producing an equal access standard is also a major objective of the committee, as local telephone company exchanges across the country struggle to meet a 1986 legal deadline of treating all long-distance carriers equally in their interconnections.

This work, and the growing emphasis by users on digital-based transmission systems, is accelerating consideration of so-called integrated services digital network (ISDN) standards, where voice, data, facsimile and video are all carried over the

same network.

T1 is the U.S. forum for developing a position for submission to world standards bodies such as the ISO and the Consultative Committee for International Telephone and Telegraph, which sets international telecommunications standards.

In Lifchus' estimation, ISDN services, which many believes will not be ready until the 1990s, will be undergoing selected beta testing in the U.S. during 1985 and 1986.

Other concerns of the T1 committee so far have centered on low bit-rate coding, where the traditional 64K-byte standard now used to transmit voice is being halved to 32K bytes with the power of advanced technology, so that twice the volume of voice-grade communications can be carried on existing telephone line bandwidths.

THE MICRO SHAKEOUT

FLASH IN THE PAN

Being in the microcomputer business is like going 55 miles an hour three feet from a cliff. If you make the wrong turn, you're bankrupt so fast you don't know what hit you. But if you make the right turn, you're on a rocket with people throwing money at you.

— George Morrow, chairman and founder of Morrow Design, Inc., from *Quotations From Chairman Morrow.*

By anyone's account, 1985 promises to be the most difficult year yet for personal computer companies. Analysts predict that the year will be dominated by the news of more and more microcomputer firms falling by the wayside, unable to compete in the hotly contested marketplace.

At present, 350 companies around the world produce microcomputers. When the dust clears by the end of 1986, only 75 will remain in the field, predicted Kenneth Lim, an analyst with Dataquest, Inc., a San Jose, Calif.-based market research firm. More than half that number — between 40 and 45 firms — will reside in the U.S.

When asked to explain why the bloom will fade for so many companies, analysts responded with a simple explanation. The market is too crowded. Enraptured by high rates of growth over the past two years — with gains in microcomputer sales revenues of 130% in 1983 over 1982 and 85% in 1984 compared with 1983 — start-up companies

By Kathleen Sullivan

flooded the market.

But the growth rates will not be as impressive in 1985, Lind warned. He estimated that the industry's expansion rate would only be 35% over 1984's levels.

"Most companies don't have a chance," he said. "They don't have the resources to match up with the major players in the industry. They don't have the money for advertising, marketing, distributing, establishing dealer networks or penetrating niche markets."

Chris Christiansen, an analyst with the Yankee Group, a Boston-based market research company, agreed. "The real question is: Will there be a 1986 for microcomputer companies?" he said. "It's beginning to look all blue to me . . . now that IBM has decided to enter new markets and play the technology game like everybody else, instead of hanging back and waiting for others to make the market."

IBM will become ever more firmly entrenched in the personal computer industry in 1985, according to most analysts. They cited the company's recent price reductions and the introduction of the Personal Computer AT, the Topview operating environment and the business software announcements.

> In 1985, MS-DOS compatibility will be the 'kiss of death' for personal computer firms.

ries as evidence of IBM's strength in the industry.

Some analysts believe that IBM will change its course of action over the next several years as the market reaches a plateau. According to Christiansen, IBM will be moving away from MS-DOS and Xenix and heading toward the adoption of a proprietary operating system for its personal computers.

Instead of standardizing on operating systems, he indicated, the industry will move toward language standards, which will make it easier to move software from one system to another.

For the IBM-compatible firms, which make up about half of the companies now in business, this spells trouble. Christiansen said that in 1985, MS-DOS compatibility will be the "kiss of death" for personal computer firms.

'Riding the moving target'

Why? In 1985, IBM-compatible firms will have a harder time trying to "hit the moving target of IBM compatibility" because the target is moving in several directions at once: upward toward the Personal Computer AT, downward toward the PCjr and expanding in terms of the soon-to-be-announced Personal Computer II, Christiansen said.

"If you're going to be IBM-compatible, it probably means you're going to be compatible with the older [Personal Computer] architecture, which is out of date and lacks the performance of newer computers," he noted, adding "It's difficult to make the jump in compatibility from the [Personal Computer] to the AT."

According to Andy Seybold, con-

tributing editor of the "Seybold Report on Professional Computing," Topview will be the "tip" of IBM's new operating system by the end of 1985, with MS-DOS and Xenix running under it.

Seybold predicted that IBM will copyright Topview by the end of the year, making it part of a read-only-memory-based system. The IBM-compatible firms will have to scramble once again, because they will be unable to offer Topview on their systems.

'Year of the integrator'

It will be important for these firms to be able to offer an alternative to Topview, because 1985 will be the "year of the integrator," Seybold said. Unlike last year, when integrated software was the watchword of the industry, 1985's custom-

ers will expect total business solutions when they purchase a system.

When they walk into a computer store, he explained, customers will sit down with the sales staff, describe their computing requirements and design a system by mixing and matching various software packages, which will be integrated under an operating environment such as Topview.

The IBM-compatible firms will have to be able to offer an alternative, choosing among the competing environments — such as Microsoft Corp.'s Windows, Digital Research, Inc.'s Gem or Quarterdeck Software's Desq — so they can offer a similar solution to their customers, Seybold said.

The analysts agreed that Apple Computer, Inc., which has eschewed IBM-compatibility, has the best

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THE MICRO SHAKEOUT

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chance of surviving the IBM onslaught in 1986. Apple will flourish, he said, because it provides an alternative.

"You can divide the market into two parts: the people who will buy IBM and the people who won't," said Dataquest's Lin. "Whoever is a leader in [the microcomputer] market will survive."

While some observers expect AT&T to offer another alternative to IBM, most analysts questioned AT&T's present course of action. AT&T cannot strike out on its own, as Apple has, because it is already "too locked into PC-DOS," said Aaron Goldberg, an analyst with the Framingham, Mass.-based market research firm International Data Corp. (IDC).

The firm will find success by pushing Unix as an operating system

for single-user systems. In 1986, Unix will be prepared for the disaster it really is," he noted.

The VAR market

Are there any viable strategies for surviving the shakeout in 1986? While many analysts suggested that the value-added reseller (VAR) market represents a protective niche for personal computer companies in 1986, IDC's Goldberg questioned the wisdom of that strategy.

"The VAR market is not the salvation of troubled microcomputer companies," Goldberg said. "Most VARs are very discriminating buyers. What would make them think that a company that failed when it went up against IBM in the retail market would be appealing in the VAR market?" he asked.

According to Goldberg, selling to

the VAR market is a "harder sell than retail." "The companies that will be successful in the VAR market will be those with 20 years' experience and a broad product line, not a troubled firm that sells micros, he explained.

Guidelines for surviving the shakeout

While there are no hard and fast rules on how to survive the shakeout in 1986, the analysts offered a variety of guidelines for companies that will try to make it through the year:

■ Try to jump ahead in terms of the technology.

■ Seek shelter in market niches. Find contentment with .01% market share.

■ Grow big enough to maintain independence. Plan on spending at least $10 million to $20 million on advertising and a similar amount on

R&D. Develop a strong dealer base by offering dealers proposals they cannot refuse.

■ Keep a watchful eye on the corporate financial health. Preserve the financial base. Maintain a good cash position. Spend carefully so that the firm has the money to weather the inevitable dry spells.

■ Get production costs down by designing low-cost, efficient manufacturing plants. Consider moving offshore.

■ Advertise. It does not matter if you have got a great product if no one has heard about it.

■ End external product development cycles. Customers have lost their patience with companies that promise products they cannot deliver.

■ Sell aggressively. Get down to the nuts-and-bolts work of getting contracts signed.

■ Establish a corporate framework that allows the company to bring in a good, solid management team as the firm grows.

THE MICRO SHAKEOUT

Firms reentering micro fray said to face long odds

Osborne Computer Corp. and Victor Technologies, Inc. — in many ways these companies have come to symbolize the reckless and ruthless nature of the personal computer industry, to which each has fallen victim.

Within the past two years, these two companies filed for protection under Chapter 11 of the Federal Bankruptcy Act, winning at least a temporary reprieve from their troubles; time to devise a plan to pay off creditors and regroup.

Like the mythological phoenix that consumed itself in fire and then rose again to build another life, these firms intend to emerge once again and regain market footholds.

Victor Technologies expects to receive the final seal of approval on its reorganization plan in late 1984, said Roy Wright, president of the Scotts Valley, Calif.-based firm. By the end of January the company will finalize the sale of Victor Technologies to Datatronic AB, a Swedish computer company.

Osborne plans to make a simultaneous announcement in January that will herald the company's exit from bankruptcy court and its inauguration as a publicly held company, said

Brown

Ronald Brown, the firm's president (see story page 99). The Fremont, Calif.-based firm, which played a pioneering role in the portable computer industry by introducing a machine with bundled applications software, recently unveiled two new portable machines.

But what are their chances of survival in an industry that has become even more competitive in their absence? Some analysts expressed skepticism that the firms could recover a significant share of

the market.

Robert T. Cornell, first vice-president of Paine Webber, Inc., a New York-based securities firm, said the companies will fall in their efforts to carve out a new place in the market because their computers are still priced too high. "People don't believe the portable computer market will go anywhere until its current cost less than $1,000," he said.

Andy Seybold, contributing editor of the "Seybold Report on Professional Computing," said the companies that struggled to survive in 1984 will find 1985 an even more difficult year. "The competition is going to get keener in 1985," he said. When asked to describe the companies' chances of success in the 1985 marketplace, his answer was succinct. "Not good," he said.

But Bob Kuxstve, vice-president of Gnostic Concepts, Inc., a San Jose, Calif.-based market research firm, took a more philosophical point of view.

"Osborne is a different company now," he said. It has scaled back, narrowing its focus to niche markets, he explained. Kuxstve said Victor Technologies' odds on survival were an even call at present, but, like Osborne, it

Wright

retained some strength as a result of its European distribution network.

Not surprisingly, the current presidents of Osborne and Victor Technologies are bullish on their companies' future.

Osborne's Brown said these factors allowed the company to forge a viable reorganization plan: Osborne's brand-name recognition; its worldwide customer base; and its international distribution network. The company plans to pay off its remaining $5 million in debts out of the firm's assets, he said, adding that Osborne will use the proceeds from its $3 million stock offering to fund product development.

Ironically, the company has emerged from bankruptcy proceedings with a financial advantage. According to Brown, Osborne will not have to pay taxes for the next 15 years, until its profits exceed $18 million, because it inherited a tax loss carryforward from its troubled parent. "What was bad news for the old Osborne is good news for the new Osborne," he said.

Sights on the vertical mart

Like Osborne, Victor Technologies has set its sights on the vertical market and recently introduced 18 vertical-market software packages. The company will direct its efforts at selling to small business, said Victor Technologies' Wright. No longer will Victor Technologies make the mistake of "trying to be all things to all people," he said.

Victor Technologies plans to introduce enhancements to its computer line, which includes the Victor 9000 as well as the Vicki portable, during the first quarter of 1986, Wright said.

In addition, the firm will unveil its next generation of computers by the end of that year, he added.

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ALL PUMPED UP

By Jeffry Beeler

For years, they remained cloistered in their own self-contained, little world far from the hubbub of mainstream information processing. Far and away the computing field's number-crunching speed champs, they quickly entrenched themselves in large research institutions, government agencies and a few giant oil companies. There, they soon made a name for themselves by solving esoteric, stupifyingly complex problems that no other processors could even dent.

But for the vast majority of the world's user organizations, supercomputers lay woefully beyond reach — their towering price tags and proprietary architectures forming seemingly insurmountable barriers to acquisition. Even now, high-speed vector processing remains largely the preserve of a few scientific or engineering heavyweights, the only operators technically adept enough to master its many intricacies.

In a sense, today's supercomputers bear a curious resemblance to the micros of yesteryear. During the mid-1970s,

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Projected supercomputer shipments and installed base

personal computers were little more than a gleam in the eye of a small band of high-tech visionaries, a diversified plaything apparently devoid of widespread commercial potential. Only a few years later, the newfangled technology suddenly came into its own, burst free of its cramped confines and took the business world by storm.

Today, industry history seems poised on the brink of repeating itself — only this time on the opposite end of the performance spectrum. Already, supercomputer use is steadily climbing, and during the coming year and beyond, installations are almost certain to increase, according to Kevin Moriarty, a seasoned vector processor user and computer science professor at Canada's Dalhousie University.

Much of the expanded activity, to be sure, will take place among the large defense- and research-oriented users that have formed supercomputing's traditional stronghold. But increasingly, number-crunching machines are expected to expand their limited sphere of influence and find their way into environments from which they have hitherto been largely excluded. One of these new-found user domains will be the world of big business, according to Carl Clausch, National Advanced Systems Corp.'s (NAS) marketing director for technology planning.

Moreover, the influx of vector processors into the commercial realm is expected to come from diverse sources. Part of the increased traffic will undoubtedly consist of high-end machines of the sort that have long been sold by the supercomputer field's two leaders, Cray Research, Inc. and Control Data Corp.

Also contributing to supercomputing's heightened commercial presence will be a flock of comparative newcomers to the number-crunching game. One such recent market entry is likely to be special-purpose vector processors that basically serve as scaled-down versions of full-fledged supercomputers. Priced at less than $1 million, near-supercomputers will specialize in the dedicated scientific and engineering applications where supermini computers have traditionally been preeminent, according to

Eugene Starr, vice-president of the Boston-based Moseley Hallgarten Estabrook & Weeden, Inc. brokerage firm.

Another supercomputer subspecies that seems destined to have a major corporate impact are the emerging IBM-compatible vector processors, which first appeared on the scene earlier this year with introductions from Amdahl Corp. and NAS.

For corporate information systems organizations, the implications of supercomputing's increased business profile are manifold and, in some cases, conflicting. On one hand, the recent advent of IBM compatibility promises to hasten a reconciliation between administrative DP and scientific processing by removing the architectural impediments that have historically kept the two apart. The coming union, in turn, will bring technical computing operations increasingly under MIS control, according to Wayne McIntyre, Amdahl's special-purpose systems director.

On the other hand, as the supercomputing performance range continues to extend downward, corporate users can expect their vector processing resources, which in the past have been highly centralized, to be gradually dispersed. Thus, the same distributed processing forces that have long been at work in MIS will soon overtake scientific computing as well, according to Bob Paluck, president of Richardson, Texas-based Convex Computer Corp., a near-supercomputer supplier.

Unlike general-purpose scalar mainframes, which are optimized for transaction processing, vector computers are geared for executing scientific programs, which typically require one instruction to operate simultaneously on long streams of elements.

At present, the worldwide base of installed supercomputers still totals only about 100 or so machines. But by the end of the decade, the population will swell to include some 2,000 units, Moriarty predicted.

During the same period, the total market for large-scale number crunchers will expand from $300 million to approximately $1.5 billion, according to Amdahl's official projections.

IBM poises for timely entrance into vector processing

By Jeffry Beeler
CW West Coast Bureau

Although supercomputers will continue to be used heavily for specialized scientific and engineering tasks, they will increasingly find use in applications that have traditionally relied on scalar processing techniques.

An estimated 20% to 40% of all general-purpose MIS programs are written in Fortran and thus lend themselves readily to vectorization. Such applications include certain data base management jobs involving large volumes of information, the various elements of which can be processed independently of each other.

"If, for example, you're

> *An estimated 20% to 40% of all general-purpose MIS programs are written in Fortran and thus lend themselves readily to vectorization.*

calculating the salaries for each of a company's employees, you can easily form the raw data into vectors and process it in a pipeline computer," Moriarty said.

Other applications that are likely to migrate someday from scalar to vector processors include financial modeling, commodities forecasting and stock market analysis. In fact, "supercomputers would probably make sense in any commercial application where users have to recognize patterns in lots of data and react swiftly," David Hertz, director of the University of Miami's Intelligent Computer Systems Research Institute said.

In the long run, the way users think about supercomputer applications will fundamentally change. "People will stop asking what supercomputers can be used for," Ken Wilson, the James A. Weeks professor of physical sciences at Cornell University said. "Instead, they'll start thinking about supercomputers in the same way they talk about personal computers. No one asks what the applications for personal computers are anymore."

Virtually all industry pundits agree on at least one point: Sooner or later, IBM is almost certain to announce its long-awaited entry into the vector processing marketplace.

But when will the announcement take place, and what form will it ultimately assume? On these and similar speculative questions the experts quickly part company.

For years, IBM has largely refrained from entering into the insular world of high-speed vector processing. The reason for the company's apparent indifference is simple: For all its potential strategic value and long-term market promise, supercomputing remains comparatively small potatoes in the information processing scheme of things.

Although it already accounts for an estimated $300 million in sales, the number-crunching market is still far too small to draw much more than an occasional sidelong glance from Big Blue.

"For IBM to become seriously interested in a market, it has to exceed $1 billion," Eugene Starr, vice-president of Moseley Hallgarten, a New York-based brokerage firm, said.

Even so, a widespread wariness of IBM's long-term intentions persists — and with good reason. Already, signs of the company's grow-

arena, allowing others to till soil of number crunching

ing interest in vector processing abound.

Not long ago, for example, the industry giant underwent an internal shakeup in which the commercial and scientific sides of its computer business were organizationally separated — a sure indication that a major market assault lies ahead.

Perhaps even more revealing were recent remarks made by IBM chairman John Opel, who publicly acknowledged his firm's supercomputer development efforts before a gathering of Big Blue's stockholders in Los Angeles.

But what makes IBM's future debut as a number-cruncher an all-but-foregone conclusion in the vector processing field's steep projected growth. For the immediate future, though, the company will continue to stand casually on the sidelines of the supercomputer field and quietly bide its time. IBM is behaving in accordance with a stated-and-true formula, according to Wayne McIntyre, director of special purpose systems. "IBM seldom innovates markets," he said. On the contrary, it allows its competitors to till the soil of new product opportunity and plant the technological seeds. Then, when the crops have ripened and are ready to be picked, it sends a convoy of blue combines out of Armonk and claims the harvest for itself, while the company's rivals sputter in rage.

To see the tactics in action, McIntyre said, one need look no further than Apple Computer, Inc., which pioneered the microcomputer business only later to lose its market leadership to IBM.

The methods that worked with such devastating success in the personal computer arena will likely prove equally effective in the supercomputer sector, where IBM's initial offering will probably be an attached vector processor for the Sierra series, McIntyre predicted.

But when IBM finally does leap into number crunching

with both feet, the move will lend respectability to the entire field and greatly promote supercomputer use among otherwise reluctant buyers, according to Dalhousie University computing science professor Kevin Moriarty. Users who wish to influence the future course of IBM supercomputer development efforts should make their views known.

"What's important during the next year is the kind of information that users feed back to IBM for the evaluation of future products," Ken Wilson, the James A. Weeks professor of physical science at Cornell University said.

Supercomputers to land corporate resource roles

For Fortune 1,000 companies, success in an increasingly competitive marketplace may soon depend on the ability to use supercomputers effectively.

As their presence in the big business world steadily expands, large-scale number crunchers are destined to be elevated to the level of strategic corporate resources, according to Carl Claunch, National Advanced Systems Corp.'s (NAS) marketing director for technology planning.

"In a lot of industries during the next 10 years, the competitive edge will belong to companies that can use their processing power to achieve the most accurate results," Claunch said. "An insurance company, for example, that can improve its forecasting abilities will be able to gain an advantage over its rivals by increasing the accuracy of its group policies and lowering its prices."

Stimulating growth

Another influence that will stimulate the growth of commercial supercomputing is decreased hardware prices. Elasticity of demand applies no less to the scientific side of the information processing field than to the mainstream MIS sector, Claunch said.

Probably nowhere is the phenomenon of declining vector processor prices more clearly illustrated than in the recent advent of so-called

"near-supercomputers" — scaled-down number crunchers that typically cost a few hundred thousand dollars. Because of their comparatively low prices, near-supercomputers will greatly widen the potential universe of number-cruncher users, according to Bob Paluck, president of Richardson, Texas-based Convex Computer Corp.

Even today, only a handful of the very largest corporations can afford the luxury of installing their own in-house supercomputers, which can easily cost $10 million. "Getting the go-ahead to buy such an expensive piece of equipment is a major event," Paluck said. "It usually requires the approval of the board of directors."

So to satisfy their demand for engineering and scientific processing power, many companies have opted to use supercomputer time-sharing services for their most computing-intensive jobs and in-house supercomputers for more modest applications. But now, with the appearance of near-supercomputers, those existing vector processing resources seem destined to be replaced or at the very least supplemented, Paluck said.

To illustrate Paluck's point, consider recent developments at United Technologies, Inc.'s Mostek Corp. subsidiary, which uses vector processors for a variety of engineering purposes.

To date, Mostek has used an outside Control Data Corp. Cyber 205 supercomputer to perform its largest and most complex engineering tasks like integrated circuit simulation. "But as the complexity of our VLSI-circuitry has increased, our simulation activities have required more and more [computing] horsepower," according to Kwok Wu, manager of the company's CAD development and

> To satisfy their processing demands, many companies have opted to use supercomputer time-sharing services for their most computing-intensive jobs and in-house supermini-computers for more modest applications.

operations.

Last September, growing demand for vector processing resources finally persuaded Mostek to acquire a Convex C-1 near-supercomputer, which reportedly provides a quarter of the performance of a Cray Research, Inc. machine for one-tenth the price. The in-house C-1 is currently undergoing beta tests.

Another user organization that expects its supercomputer use to grow in the near future is Lockheed-Georgia Co., which needs scientific processors to help it design aircraft parts. Like Mostek, Lockheed-Georgia relies heavily on an outside time-sharing system in the absence of its own in-house supercomputer.

But because of the growing complexity of its design tasks, the company has seen its demand for processing power escalate and its time-sharing costs do likewise. So much, in fact, have its time-sharing bills risen that Lockheed-Georgia plans to order its first in-house percomputer sometime next year, according to Roy Harris, manager of the firm's scientific computing group.

Until the supercomputer is purchased however, Lockheed-Georgia will use an NAS 9070 with an integrated NAS vector processor to support many of the firm's CAD activities.

HEWLETT-PACKARD
TO MARKET, TO MARKET

By Kathleen Burton

n 1984, Hewlett-Packard Co. shed its technocrat image and pushed aggressively into the mainstream business computer market. The $6 billion corporation launched its drive last July to join the mainstream computer market by radically restructuring management and introducing personal computer and peripheral products that represented design and marketing breakthroughs for the previously engineering-oriented company.

HP's growth over the past 11 years would be considered more than respectable by most industry standards. Since 1973, company revenues increased at a 21.5% compound annual rate, reaching $6 billion for the year ending Oct. 31. But industry watchers said the mercurial personal computer, minicomputer and computer-aided engineering markets HP hopes to conquer in 1985 and beyond will require an all-out effort by the company to grow even faster and keep pace with industry leaders.

Before the reorganization, HP was a preeminent supplier of analytical and test instruments, minicomputers, medical equipment and scientific calculators.

"The idea behind the reorganization is to make HP as important to mainstream consumers as it's traditionally been to the scientific and engineering communities for the past 45 years," said John Young, HP chief executive officer.

Under the old organization, HP operated as a loose amalgamation of small, autonomous and often uncooperative fiefdoms, each focused tightly on its own product lines, a viable strategy only as long as HP pursued its traditional niche markets.

HEWLETT-PACKARD

John A. Young

But by 1983, when customers began demanding integrated systems and as HP's instruments and computers began converging, HP's once-viable, separatist structure became a liability.

Now, HP is targeting three distinct markets — instruments, business computers and analytical components — each consolidated under three newly organized product divisions and sales teams, overseen by Dean Morton, newly appointed chief operating officer.

Ross Hunt, marketing manager of HP's Information Systems Group, and overseer of the HP 3000 series microcomputer unit, said, "The glass-enclosed walls of the computer room are breaking down, and 85% of HP's future business will be integrated products such as microprocessor-

driven instruments and distributed data processing products networked to (personal computers)."

HP 3000 series enhancements

According to Hunt, with this in mind, HP plans several product enhancements to the HP 3000 series next year — memory upgrades, tighter integration between the HP 3000 and future personal computer products, more microcomputer-based applications and significantly larger data bases.

The year will also bring more competitive pricing for next-generation HP 3000 series products, Hunt said, and sales efforts that will increasingly focus on previously neglected value-added resellers, original equipment manufacturers and software suppliers.

"We've targeted (value-added re-

sellers), OEMs and software developers next year to supply integrated solutions for largely untapped vertical markets that we never took the time to understand before," Hunt said. There will also be changes in field sales in '85, said Roy Verley, HP's director of corporate public relations.

HP's field sales group will act as an early warning system for customer needs in '85, bringing complaints and problems back to corporate management, he said.

"Salespeople in the field are in a unique position to spot a customer's incipient toothache long before it becomes a full-blown problem, and we plan to use this resource," Verley said. HP will also adopt a long-time IBM sales strategy next year, Verley said, using floating, on-call technical product specialists to back up HP's traditional sales teams.

Increased support in 1985

Users will also benefit from increased support in 1986, Verley said. The company's recently created National Response Centers, located in three U.S. cities, will offer 24-hour remote diagnostics via satellite for international and domestic customers.

A dark cloud on HP's horizon, however, is last year's abortive attempt to gain a leading position in the lucrative computer-aided engineering (CAE) market, expected to grow to $275 million by the decade's end.

In 1984, the resignation of several key CAE division managers and engineers, the disappointing performance of HP's 9000 series workstation — intended to spearhead HP's entry into the burgeoning market — and a relocation to Colorado decimated the division, according to Rich Edwards, a former HP employee who tracks the company for Robertson Colman Stephens, a San Francisco investment banking firm. "HP's CAE group is now an empty shell, and new product introductions are at least six months away," he said. Even though the division is now back on course, consolidated under a new management team and scrambling to get new products out the door, Edwards said the delay in entering the exponentially growing market (which is expected to double in 1985) will cost HP irretrievable market share next year as competitors like Valid Logic, Inc. and Daisy Systems, Inc. rush new products into the market.

According to some analysts, a customer-driven new products strategy is critical in 1986 if HP intends to gain significant market share in the diverse product areas it has targeted.

Myron Kerstetter, program director for small computer systems at the Gartner Group, Inc. in Stamford, Conn., said, "1986 will have to be a product development phase for the company, as they are two years late in getting a high-end 32-bit HP 3000 product into the market."

Due to this, according to Kerstetter, the competition (led by Digital Equipment Corp. and Data General Corp.) is rapidly closing in, causing HP to drop prices throughout its minicomputer line and seriously impacting margins and profitability throughout the entire company.

Kerstetter said aggressive price discounting of the HP 150 personal

HEWLETT-PACKARD

Special group spearheads HP's marketing campaign

Hewlett-Packard Co.'s 18-month-old Personal Computer Group (PCG) has dramatically changed the way the rest of the company conceives, develops and sells its products, according to Cyril Yansouni, PCG vice-president.

Although the company did $500 million in personal computer business last year, before the group was formed HP had a disjointed personal computer strategy that targeted only its traditional scientific and engineering customers, Yansouni said.

"Personal computers are a must-win market for us now," Yansouni explained, "and creating the PCG was a good way for the company to learn marketing."

The blitzing of the personal computer market by IBM and Apple Computer, Inc. made it apparent that the burgeoning personal computer market, of which HP held only a 2% market share, was driven by average consumers. As a counteraction, HP planned to update its marketing strategy.

Last year, HP began lowering prices aggressively on all its products, from the HP 150 personal computer to the Thinkjet

Murphy

and LaserJet printers, a trend expected to continue next year in its 3000 line.

According to Bill Murphy, marketing manager of the PCG, the division's plans for '85 include focusing on personal workstations in the $1,000 to $6,000 range, with four major computer product introductions scheduled for the year.

Other plans include extending the conceptual planning phase of product development and continuing to

use the consumer marketing techniques that proved so successful in products released in 1984 — such as quantitative market research, focus groups, test marketing and closer attention to positioning.

Murphy said his division plans to trim costs and increase dealer productivity through the newly established Dealer Advisory Council, an aggregate of 12 dealers from across the nation who will meet four times with HP officials in '85 to hash out product, promotion and delivery strategies. "We still have a lot to learn with retail," Murphy admitted.

The net effect of PCG's 1984 efforts has been a rapid rise through the second tier personal computer companies, Murphy said. "Our challenge in '85 is to distance ourselves from the second tier companies and cut into the first tier — Apple and IBM," he said.

But according to some industry watchers, HP may still not be pragmatic enough to succeed against IBM in the personal computer business. R. David Crockett, a former HP executive and president of the market research firm Dataquest, Inc. in San Jose, Calif., said, "HP's advertising budget is much too small when you consider Apple is spending $100 million on advertising next year," while HP plans to spend $30 million. "At that rate," he said, "they don't stand a chance against Apple or IBM."

Yansouni

computer and HP 3000 lowered product demand (due to the lack of new products) and last year's costly marketing efforts took financial tolls on the company in 1984.

HP's fiscal year figures bear him out, indicating that margins and profits have flattened out (in 1984, fourth-quarter profits were up 14%, compared to primary competitors DEC and DG, who both posted increases in the low 50s) and sales for the quarter showed only a 27% increase, trailing DEC (41%) and DG (53%).

Still reeling from the reorganization, Kerstetter predicted HP would release only minor enhancements to existing 3000 products next year, such as increased networking capability for low-end 3000 series products, several new micro products and networking support for the IBM Personal Computer.

In sum, in 1985, a feisty HP will enter the ring with gloves on, targeting the personal computer, CAE and minicomputer markets, armed with new products and new marketing strategies and ready to roll with the punches from the industry's big boys. "We plan to win big," was Young's optimistic prediction for next year.

But, to do so, HP must overcome several obstacles. Most importantly, the company must introduce new, competitively-priced personal computer and 3000 series products into the market before the year is up to head off a triumvirate of serious contenders — IBM, DEC and DG.

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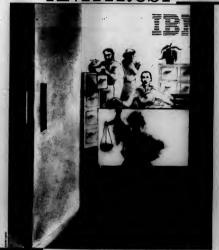
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THE SPECTER OF ANTITRUST

By Edward Warner

Two years ago this month, the U.S. Justice Department dropped its antitrust case against IBM. Some say the giant of Armonk, N.Y., whose 1983 revenues topped $40 billion, walked from the courtroom back into the competitive arena — and came out swinging.

In addition to having pressed the advantage of dominance in most market niches where it competes, the company has also made key minority and total acquisitions, including a 25% stake in Intel Corp. and the recent $1 billion-plus acquisition of Rolm Corp.

"Whether the strategies involve influencing lease vs. buy actions, outside leasing arrangements, volume-discount leveraging or drastic cuts in purchase prices, IBM is dramatically changing its traditional stance and using every means to meet its competition head on," said a 1984 report on IBM strategy produced by the International Data Corp. (IDC), a Framingham, Mass.-based computer industry market research firm.

IBM's competitive strategies all fall within the limits of the law, according to IBM spokesman Peter Kuhn. And, he argued, they are often based on competitive pricing or advances in technology.

Some IBM competitors are not convinced. At least one, BMC Software, Inc., filed suit late last year in the U.S. District Court for Northern California, claiming IBM had violated antitrust laws by bundling two data communications

products with the release of its IMS data base management system.

"They're saying we're bundling; we're saying we're not," Kuhn responded. A hearing in the case was held in December, but no trial date has been set.

The justice department, meanwhile, is also taking a critical look at IBM. The agency calls it part of a routine investigation of the settlement IBM reached with Hitachi Ltd. in a suit IBM had brought alleging copyright infringement. Parts of that settlement were not made public, and computer industry analyst Robert Djurdjevic, editor of the industry newsletter "Annex Computer Report," claims the settlement requires that

> *'There is] no rule against having a very large market share. The question is how you come by it and how you keep it.'*
>
> — William Baxter, former U.S. Assistant Attorney General

IBM be permitted to inspect Hitachi computers prior to their introduction. Kuhn denied this and said that Hitachi would, at its option, be able to permit IBM inspections but only after the product had been unveiled.

In a letter to Djurdjevic, though, Assistant U.S. Attorney General J. Paul McGrath, head of the agency's antitrust division, said that "The fact that IBM freely can use the courts to pursue its claims does not mean that it can unlawfully extract from its opponents settlement terms that have anticompetitive effects." A Justice Department spokesman said the the investigation, begun in June of 1983, is continuing

Although competitors may be eyeing the courts as an option to curb IBM, the track record of previous ef-

forts has not favored those plaintiffs. During the 1970s, IBM faced at least nine lawsuits from competitors that claimed the firm had violated antitrust laws. Although IBM did make large out-of-court settlements in some of those suits, such as its 1973 settlement with Control Data Corp., IDC data indicates that IBM won all of those cases that went to trial.

Since the settlement of the Justice Department's case, IBM has sued 10 firms for

either dealing in its trade secrets or infringing on its copyrights. Some of those suits, such as the ones against Hitachi, National Semiconductor Corp. and its subsidiary National Advanced Systems, lasted months. Others, such as the one against the Gartner Group, Inc., a Stamford, Conn., consulting firm, were settled within days.

The most recent celebrated attempt to prove IBM guilty of antitrust law viola-

tions, U.S. v. IBM, was eventually abandoned on Jan. 8, 1982 for what the Justice Department described as a lack of evidence. On the international level, IBM has also prevailed, settling in 1984, on what are said to be favorable terms, an antitrust investigation by the European Economic Community.

Former U.S. Assistant Attorney General William Baxter, the man who announced the government's decision to cease prosecution of IBM,

said he believed that IBM is "too well represented by too smart counsel" to fall into antitrust culpability. He added, though, that such charges might well be brought against the company by a future administration. "I would hope that they would have better evidence" next time, said Baxter, who is now a professor of law at Stanford University in California.

Such evidence must do more than point to IBM's

dominance in some computer industry fields, Baxter said. There is, he noted, "no rule against having a very large market share. The question is how you come by it and how you keep it."

In the view of Ray Carlson, a former chief prosecutor in the U.S. v. IBM case, a successful prosecution of IBM would have to show that the firm acted with another organization to fix prices or had priced its products below cost, a practice known as "predatory pricing." But, he added, "It is impossible in any view to prove predatory pricing, [because] it's not a competitive market with a monopolist in it."

Carlson said he is sure that IBM is in no current danger of Justice Department antitrust action because "There is just no more Section Two enforcement [of the Sherman Antitrust Act] in the U.S. government. Section Two of the Sherman Act, the nation's prime antimonopoly law, forbids independent monopolistic practices.

"Not only isn't it being enforced," he added, but "under current views of the law, it probably couldn't be enforced." Only Section One of the Sherman Act, which bans anticompetitive agreements such as price fixing between two or more firms, is receiving enforcement, he claimed.

Yale Law School Prof. George Priest, an expert in antitrust law, disagreed. The "Reagan administration has focused on Section One offenses," he said, because the "law makes it difficult to make out Section Two offenses."

While claiming that "IBM is the darling of the Reagan administration," industry observer Frederick Withington, vice-president for information systems with Arthur D. Little, Inc., said the true reason IBM faces less danger of antitrust prosecution is because its "frog-to-puddle ratio is declining." By that, Withington said, he meant that "IBM is smaller, relative to the overall competition," especially in relation to foreign newcomers such as Hitachi, Ltd., Philips Information Systems, Inc. and Matsushita Electric Industrial Co. "If they can prove that," he added, "then there is less chance of being attacked by the regulators."

Withington admitted, though, that there are some parts of the computer industry where IBM casts a long shadow, specifically among mainframe and personal computers. There, he said, IBM's massive size "does represent an economic asset on the government's behalf," especially if the U.S. is to protect its computer industry from falling to Japanese competition. He added, however, that he "wouldn't go so far as saying that everybody wants to cobble up to [the Blue] and take them to bed."

Former Assistant Attorney General Baxter said he thinks that "from the standpoint of the national economy, [IBM's size] is just splendid," as does analyst Gideon Gartner — at least at present. While Gartner, president of the Gartner Group, said he believes IBM's size is good today because it is keeping prices down, he speculated that "in 10 years, if IBM sees it has a position of dominance, and if IBM realizes it has won the war, and the pace of innovation slows down . . . then it could be adverse for users."

A spokesman for another IBM competitor, though, said he believes enough independent-minded users will always exist to keep Big Blue's major competitors in the game. According to Memorex Corp. spokesman Bob Fermoyle, competing with IBM "isn't a survival question" for Memorex, even though CDC has exited the storage system market, and STC is now on Chapter 11. "A certain percentage of [data processing] shops will be two-vendor shops forever," he observed. "They want and need that competitor."

IBM

Case settlement raises questions

Did the U.S. government drop its antitrust case against IBM because it believed the judge in the case, David Edelstein, was about to decide the case in the government's favor?

That claim, made by one of the former chief prosecutors of the government's case, Raymond Carlson, is only one of the issues surrounding the unsettled case, which lasted 13 years before the government gave up trying to prove that IBM violated antitrust laws.

In an interview last month, Carlson said "The reason [the case] was dismissed was that the Reagan administration had concluded that the judge was going to find that monopolization

had occurred."

Former Assistant Attorney General William Baxter, however, insisted that the government abandoned the case because of a lack of evidence.

Had Edelstein ruled in the government's favor, the likely penalty is uncertain. Would the firm have been fined or would it have been broken up, as was the case in the suit brought by the government against AT&T, and settled on the day that the IBM prosecution ceased?

One economist who testified on the government's behalf, Lee Preston of the University of Maryland, said he "was sorry that IBM Domestic and IBM World Trade were not separated."

One or both of the two divisions, competing as separate firms, he said, might eventually have become as eager and innovative as Northern Electric after it was separated from Bell Canada to become Northern Telecom, Inc.

Preston said he did not view the U.S. Justice Department's conditional approval of IBM's acquisition of Rolm Corp. as creating the potential for an IBM monopoly in private branch exchange communications. "Rolm is not a terribly large company," he said.

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COMPUTERWORLD

1984

1985

EDITORIAL

New Year's revelations

You hold in your hands *Computerworld's* fifth annual Forecast issue, the culmination of months of effort by the editorial staff of this newspaper.

As in previous years, our objective has been to suggest the forces and trends data processing management will have to reckon with in 1985. We paint in broad strokes in this issue, leaving the fine detail to professional forecasters and the events themselves to the future. Some key areas to watch are:

■ DP budgets will be more conservative in 1986. Yes, corporate DP budgets are growing, but at a slower rate than in any of the past three years. Managers surveyed by *Computerworld* in late November reported an overall budget increase of 9.9% in 1985 vs. 12.4% in 1984, which means there were fewer new hires, deferred software purchases, tighter cost control and a continued application backlog.

■ Microcomputer costs will drop, but the user's cost may climb. Micro users are getting more bang for the buck from their hardware, but the typical configuration cost is rising, not falling. This is because full systems service and support does not come cheap. By one estimate, each fully supported desktop machine in a Fortune 1,000 company costs $8,000.

■ Capacity planners face increased demand for more horsepower. The growing number of micro and intelligent terminal users who want access to the mainframe will further strain system resources. Accommodating them will require new and unexplored approaches to a problem that will not go away.

■ More users will embrace bypass. A number of Fortune 1,000 companies are now waiting for dust from the AT&T divestiture to settle. They have begun to take control of line rates by practicing some type of local or long-distance bypass. Technologies such as CATV networks and low-cost, two-way satellite systems are expected to mature in 1985, heightening user interest in bypass alternatives.

■ IBM software prices will rise. One of the fastest growing segments of the company, software is an increasingly important component of IBM's revenue growth. Software products could account for 8% of total revenue in 1985, up from 6.5% in 1982. Users should probably brace themselves for higher price tags — dramatically so in some cases.

■ The Japanese still face major hurdles in the U.S. computer market. Japanese companies have not yet cracked the micro and large-systems markets in the U.S. — nor will they in 1985. This owes to weaknesses in Japanese software, lack of American distribution channels, unfavorable market-entry conditions and cultural differences.

■ The threat of the 'intelligent terrorist' will require DP vigilance. The intelligent terrorist that recognizes the value of computer centers to the fabric of society fortunately has not yet arrived. But terrorists have launched isolated attacks on data centers, and authorities warn of the threat to fragile computer-based networks.

■ Supercomputers will find a new market in commercial DP. High-speed vector processing remains largely the preserve of scientific or engineering heavyweights. But number-crunching machines are moving into corporate environments.

You'll find these and other revelations in the pages of this issue. We'll be watching them as closely as you throughout the new year.

TRW
CREDIT RECORD
DATA BANK

...AND BEFORE I DO THIS ANTI-HACKING CHECKUP, I JUST WANT TO MAKE SURE I'M NOT IN YOUR FILES...

LETTER

Basic DP concepts need rethinking

Hurray for David Hayes in "Integration halves fireplace maker's DP costs" [CW, Dec. 3]. The decisions that he successfully implemented are not easily swallowed, but the underlying problem that he managed to turn around has roots that go very deep.

More and more followers and leaders of DP are being asked to use a product or methodology that never or only partially performs its intended function. Many times the product may even be outdated by the time it is implemented. All of this is forcing a rethinking of the basic DP concepts.

One wonders if corporate expenditure decisions for DP support are being left in the hands of those who have mastered the ability to double-talk. They were probably very good at the hula hoop, wear Calvin Klein jeans at home and rallied to Mel Brooks' cry, "Gentlemen, we've got to protect our phony-baloney jobs." These people love water-cooled, bubble-memoried, cattle-prod-prompted behemoths and closets full of razzmatazz. But then, they don't have to use it.

People who make the decisions must be those who are actively involved with the problems at hand and have to solve the problems using the tools they acquire. It is not enough to allow expenditure decisions to be made based on hyped-up brochures and media blitzes surrounding a product that has been packaged to appeal to the market's sublime pleasure centers.

Hayes seems to have been very fortunate in that he levelheadedly approached the inadequacies in his shop's position, got back to the problem at

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VIEWPOINT

'Know-how' machines on the horizon

LECHT
ON SCIENCE
Charles P. Lecht

Part 1 of series

Recent happenings in our industry suggest that 1985 will be the year when practical artificial intelligence applications will leave research laboratories to make their way into our workaday world. The increasing availability of micro systems capable of processing massive information bases is making it possible to create such systems.

The emergence of advanced, integrated service, digital networks and powerful terminals is paving the way for AI systems. Emerging federations of high-technology companies and traditional business institutions — finance, insurance, energy, education and so on — will create the source of their intelligence.

The formation of these federations is an event of staggering beauty. Born in the late 1940s, our computer industry has evolved from a few, small laboratories producing experimental calculating instruments to a massive enterprise spawning an ever-increasing sea of data and information processing devices — some of which seem to possess an intelligence that confounds us. To many, this intelligence appears indistinguishable

Lecht is chairman of Lecht Sciences, Inc., a New York-based think tank specializing in computer and communications technologies.

from that which we thought was found only in human beings.

Evolving partnership

During this evolution, the model of our American computer industry, as it related to other industries, was cloned both inwardly and outwardly. It spread from our largest industrial corporations to our smallest and spilled over into foreign lands. Now, this model, which heretofore presumed the employment of computer technology to be mostly an adjunct to other industries, is changing to become one of partnership. This is likely to create new product development environments that are catalysts for computer system technologies of improved utility.

I believe the appearance of these "know-how" machines confirms that our hopes and aspirations for the creation of computer systems are being realized — more productivity with less toil.

There follows, now, a scenario for how this happens. As if obeying some mysterious and immutable law instituted in its collective consciousness by an otherworldly force, the banking industry's largest members have metamorphosed into massive computer systems/basin. Similarly, our largest computer companies are undergoing a metamorphosis to massive information processing systems that do more than merely provide hardware, software and services; family members provide financial problems. As the sum of capability, for example, when IBM and Merrill Lynch work together to address personal financial problems, or when GM and EDS collaborate to address mobility problems.

Replication of all intelligence levels

I call these systems "know-how machines" rather than, say, "expert systems" on purpose. The former

computer companies are creating federations with the largest corporations in other fields: Communications, automotive, publishing, brokerage, insurance, manufacturing and aerospace companies head the list. These usually start as joint ventures, such as the recent IBM and Merrill Lynch Pierce Fenner and Smith, Inc. venture to market financial data systems and services [CW, March 26]. They can also emerge through acquisitions, such as General Motors Corp.'s takeover of Electronic Data Systems Corp. (EDS) [CW, Oct.1, Oct.8].

However they happen, these new business entities prefigure the form all industries will adopt as computer technology joins with other industries to transform the way we do business.

The products resulting from such federations will provide us with the means to address problems of increasing consequence to us. They will, quite naturally, see first application to problems with the biggest payoff potential. Later, they will be used to spawn systems whose costs will put them within reach of even smaller enterprises, providing one of mankind's most precious gifts — automated know-how. The kind of capability, for example, created when IBM and Merrill Lynch work together to address personal financial problems, or when GM and EDS collaborate to address mobility problems.

may appear to be nothing more than a euphemism for the latter — an AI entity possessed of expertise. I intend to know-how machines to have a broader meaning than that implied by the word "expert." I envision AI embracing the replication, in machine format, of all forms and levels of intelligence that we encounter in the world of human intelligence — and hopefully more.

I cannot conceive of a world devoid of dumb, sometimes fumbling robots, in addition to others that may eventually exceed us. Like old Chevrolets, primitive forms of artificial intelligence will always find a place. I say this because I want to reserve the title of expert system for a special class of know-how machine — those possessing expertise as we have come to accept its meaning. Many know-how machines, in fact most, will possess no more expertise than the mundane skills expected of people in the nonexpert category.

Large or small, possessing expertise or something less, know-how machines will be composed of hardware, software and data and will be packaged in a manner to facilitate their swiftest application. They will be purchased and installed by businesses and individuals alike. Their availability will enable a quantum leap in our industrial efficiency, and the basis of our economic system — competition — will benefit from their appearance. Success will be based less upon what the competition cannot do because it lacks know-how and more on what it can because it has know-how.

You may consider this forecast

Hacking incidents mandate stricter security

HUMAN
CONNECTION
Jack Stone

This industry has seen its share of bizarre antics over the years, but I don't recall any as weird — perhaps distressing is a better word — as that concerning Richard Sandza, a reporter for Newsweek magazine. The story was splashed all over the news recently, but if you missed it, let me give you a quick summary.

Sandza, in an article he wrote for the magazine Nov. 12, let the public in on a secret that was known to no surprise to DP workers. In a ring of hackers, operating an elaborate underground network using personal-computer-based electronic bulletin boards, had been passing around illegally obtained computer access codes, credit card numbers and telephone numbers.

As a consequence of his article, the hackers stuffed Sandza's phone line using autodialing systems; threatened to shut off his home electricity by remote control of the power company computer; and conducted a modern-day version of a medi-

Stone is an independent management consultant, educator and writer, specializing in DP human communications and personnel development, based in Washington, D.C.

eval inquisition — a "teletrial" — in which they debated his fate — anonymously, of course — over a central bulletin board.

But this was just fun and games for these hackers — a warm-up for the big league. With a little ingenuity, they cracked the TRW, Inc. Information Services Division's credit files, pulled Sandza's

It is completely mystifying why organizations that provide telephone access to their data bases continue to equate security with little more than password protection and user identification

credit card codes and passed them around.

The issue here is not how far out of touch with this society these people are, nor how much sympathy they deserve because their parents didn't give them nickels for Tootsie Rolls when they were kids, causing them to feel unloved ever since. The truth is that they violated the law in numerous ways — wire fraud, conspiracy and threats of bodily harm — and should be sent to prison until

they learn their actions will not be tolerated.

Let me turn now to the issue of the security controls on the TRW credit system — or better stated, the lack of controls. This system should be familiar to you as the result of a highly publicized incident earlier this year when hackers reportedly penetrated the TRW division's files [CW, July 2] — an action that be can performed by any high school dropout who can steal a subscriber's telephone number and password and has a household dozen or so to invest in a low-grade, modem-based micro.

Delia Fernandes, TRW Information Services' public affairs director, said in the Dec. 6 Washington Post, "You can put all the sophisticated bells and whistles on a computer that you can think of to keep it secure. But if someone who has the legitimate right to get into the system . . . releases the password . . . you have lost that security."

This statement provides a shocking example of the naive associated with system security that penetrates this industry. After years of warnings, it is completely mystifying why organizations that provide telephone access to their data bases continue to equate security with little more than password protection and user identification.

I realize that there would be added costs and inconveniences involved in implementing additional security safeguards. But consider the legal problems presented by the illegal penetration and distribution of data.

Can it happen to your data center? That's for you to judge.

VIEWPOINT

LETTERS

AI programs not true to life

As I was reading "Experiments in Artificial Intelligence" [CW, Nov. 12], I found myself disturbed, not so much by the content of the text, but by the content of the example. I became irritated while reading the diverse scenario, which was analyzed by the Boris AI program. I found the cliche about women being selfish, dishonest and promiscuous irritating. Of course, the man was hard-working, but poor, and had to defend himself from the selfish wife.

As I glanced back over the example, it became apparent that many others were equally poor. For instance, the example used by the Margie program showed that women could only receive action. At no point did women initiate an action. Women were told, advised, reminded, said to, and assaulted. Men, on the other hand, were able to do things, not just have things done to them. Men told people what to do, hurt other people, gave people things, went places and prevented things from happening.

The Sam, Pam, Frump and IPP programs were not given any better reading material. Women were not worth discussing, apparently.

In the conclusion, the authors pointed out some of the fallacies that the IPP program made as a result of reading these examples. One is forced to wonder what conclusions the program would have made about women and men.

It is not clear whether the fault owes to the selection of examples for the article or whether the examples given to the programs were full of absurd and offensive cliches about women and men. If the former case is true, perhaps the authors should have given as much thought to how the readers would interpret the article as they gave to how computers understand language. If the latter is true, the individuals who wrote the examples should examine their own thinking. Either way, the article should have been well-balanced and well-written. The articles in *Computerworld* should spark intelligent and creative thought about issues in the computer business, not reinforce outdated social ideas.

Beth Shelly
Cary, N.C.

product of unbridled optimism. There were those who only a few, short years ago pooh-poohed the possibility that tens of millions of computers — more powerful than they had ever seen — would make their ways into our offices and homes. Some doubted that orbital flights would be routine and available for commercial applications and education. Automated bank tellers were inconceivable not too many years ago, yet they are commonplace today.

Now, I don't expect know-how machines to appear everywhere overnight. But in 1985 they will start to appear, and when they do, the rush to acquire them should provide endless opportunity to our computer industry.

Systems that can do the work of bank tellers, typesetters, environmental controllers, mail deliverers, draftsmen, guards and telephone operators all display some measure of intelligence as we define it. The fact that a bank teller had to use his brain to perform transactions and that machines now perform the same duties must lead us to the conclusion that machines have been imbued with some measure of intelligence. To argue that the job of bank teller does not require intelligence is unwarranted and an insult to the people who made — and still make — this a career.

hand, identified the solution and then was able to sell it to the right people, rather than attempt to prop up bad money with good money.

When we make the decision to spend the money, let's get back to the basics. Is it cost-effective for *now* and the future? Is the mission accomplished efficiently and correctly? Is the finished product what the user wanted? Designer jeans are too expensive for the use you get out of them. Let's leave fads and cosmetics to the young and let's be realistic and mature in our decisions. I'll take my faded blue jeans, thank-you.

Mike Stonewipher
St. Louis

"This unit has its own built-in power source."

SOFTWARE & SERVICES

SOFTALK
John Gatani
Our Senior Editor

Unix may enter 1985 as hot topic

It is customary at this time of the newborn year to reflect on the previous year in terms of important events and major trends. Any number of pundits and observers will begin to speak of 1984 as the year of *this* or the year of *that*.

Undoubtedly, some analysts will say that 1984 was the year of Unix — at least, they will claim, it was the year Unix became a hot issue in the computer industry. They will point to unbridled AT&T's major Unix forays and IBM's introduction of its Personal Computer — PC/IX — version of that operating system and the availability of Microsoft Corp.'s Xenix for the Personal Computer AT. They will also make glowing reference to the increasing stock of software packages introduced for Unix and the growing number of small systems with Unix support announced last year.

But if 1984 was a year in which public attention was turned to Unix, it was also a year in which its detractors became more vocal about that operating system's limitations. Nay-sayers spoke of the basic incompatibilities between the different versions of Unix, the system's lack of security mechanisms and so-called user-friendliness and the absence of advanced features such as windowing.

Unix proponents, however, say those are limitations that can be overcome, and they claim that the system's strengths — its multiuser, multitasking capabilities — outweigh its weaknesses. Much of the leviathan AT&T's new competitive strategy rests on the success of Unix — System V, at least. While AT&T may be new to the open market, it certainly has the resources required to make its presence felt in a big way. Thus, Unix backers say, if 1984 was not the year that Unix won over the majority, 1985 or some subsequent year will be.

Though Unix is AT&T's leading weapon, a key factor in the success of that system is clearly IBM. Considering IBM's dominance in the high- and low-end computer markets, what the blue force does

See UNIX page 138

Policy options aiding software industry released recently

By Peter Bartolik
CW Staff

WASHINGTON, D.C. — A U.S. government agency has urged consideration of several policy options designed to aid the U.S. software industry in maintaining its expected short-term leadership of the world software market over the longer term.

In a comprehensive review of the industry released recently, the agency reviewed the past, present and future of the U.S. software industry in light of technological changes and foreign competition.

"A Competitive Assessment of the United States Software Industry," drafted by a branch of the U.S. Department of Commerce's International Trade Association (ITA), concluded that the worldwide market share of U.S. software vendors should grow from its current 70% to 75% in 1987. Over the longer term, however, the U.S. software industry could be at a disadvantage relative to foreign competition due to U.S. government policies discouraging

market growth and policies of foreign governments favoring their own domestic companies.

The ITA's Office of Computers and Business Equipment prepared the report over an eight-month period as part of Commerce Secretary Malcolm Baldrige's plan to draw up competitive assessments analyzing U.S. industries. The study offered the following options for consideration by the U.S. government that could aid the U.S. software industry in maintaining its current leadership.

■ A coordinated program to promote the U.S. position that copyright law is the best overall form of software protection;

■ Bilateral discussions to ensure that signatory nations adhere to international conventions on copyright protection of software;

■ Through diplomatic channels, to strongly protest proposals by nations that seek to establish special legal systems outside of copyright law;

See STUDY page 134

AI field faces crucial barriers to acceptance

By David Givens
CW Staff

PALM SPRINGS, Calif. — Artificial intelligence promises to have a "profound impact" on the computer industry in creating new products, but a number of barriers will have to be overcome before commercialization blossoms, according to an executive with a leading AI company.

Lee M. Hecht, chairman and chief executive officer of Teknowledge, Inc., a Palo Alto, Calif.-based, artificial intelligence firm, said the next several years will be crucial in determining the commercial development of AI. Hecht's remarks came at the annual Strategic Issues Conference here, sponsored by Infocorp, a Cupertino, Calif.-based market research firm.

One of the principal problems facing the field, Hecht said, is that for many people artificial intelligence means that computers will think like human beings. "There is this unfortunate distraction that has

See AI page 134

Alsys compiler gets validation

Ada implementation runs on DEC VAX line

WALTHAM, Mass. — Alsys, Inc. has announced validation of its first Ada language compiler. The compiler was validated under the Department of Defense's revised Ada Compiler Validation Capability test suite Version 1.5, which became mandatory in December 1984.

Reportedly, the Alsys Ada compiler allows users of Digital Equipment Corp.'s VAX family of computer systems to develop and compile Ada programs and applications on the VAX. The compiler is targeted to systems using the Motorola, Inc. 68000 microprocessor and the AT&T Unix operating system.

A spokesman said Alsys' root compiler technology is 80% transportable to any other system, which means that only 20% of Ada compiler code needs to be custom-written for another host computer. The price of the Alsys Ada compiler is $35,000.

Alsys is located at 400 #1 Totten Pond Road, Waltham, Mass. 02154.

SOFTWARE & SERVICES

Direct marketing expert system serves IBM shops

WOBURN, Mass. — Persoft, Inc. has introduced an expert system designed for direct marketing organizations. The system reportedly allows users to determine which names on a mailing list should be mailed to and which names should be excluded from promotions because the recipient will probably not respond.

The package is written in Cobol and runs on IBM processors under IBM's OS, MVS and DOS operating systems.

According to a spokesman, the Mail Order Response Enhancer (More) analyzes historical response data or the results of a test mailing and identifies the characteristics of a likely respondent. The package assigns to each name on a list a statistical response value then issues a ranking of a list from most likely to respond to least likely to respond.

The system saves data on when mailings took place to individual names and what was mailed and incorporates the data into its forecasting equation. Individual companies using the system deter-

mine other characteristics to be figured into the equation, which may include demographics, psychographics, geographics and others, the spokesman said.

Once raw data is input, the matching of test results against the entire file and the ranking of files occurs automatically. The system reportedly "learns" from one mail-

ing to the next, continually refining its profile of a likely respondent. The More system — using the client's mailing lists — can also target entire groups of people who would be likely to respond to new products.

More is priced at $375,000. Persoft is located at 600 W. Cummings Park, Woburn, Mass. 01801.

SYSTEMS SOFTWARE

UNIPRESS SOFTWARE, INC.
Amsterdam Compiler Kit

Unipress Software, Inc. has introduced the Amsterdam Compiler Kit for AT&T's Unix operating system. The kit is a package of C and Pascal compilers and assemblers for C and Pascal programs on Digital Equipment Corp.'s VAX-11 and PDP-11 computers, and on Motorola, Inc. 68000 and Intel Corp. 8086-based processors under the Unix operating system.

The kit is a collection of programs developed at the Vrije University of Amsterdam to simplify the task of producing portable compilers and interpreters needed for micros and minicomputers.

It contains the complete sources of all programs. Source C compiler or Unix license required from AT&T — plus internal documentation describing how to make the modifications needed to add a new program language or a new target machine. Cross interpreters, used for testing, are also included.

Eight components are included: preprocessor, front end, "peephole" optimizer, global optimizer, back end, target machine optimizer, universal assembler and utility package. The full system is source is priced at $9,950 ($995 for educational institutions), and selected binaries are priced at $4,500.
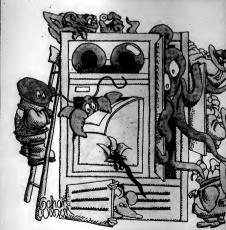
Unipress Software, Suite 318, 2025 Lincoln Highway, Edison, N.J. 08817.

MITEL, INC.
P/C Privacy: Personal/Confidential

Mitel, Inc. has announced that its P/C Privacy: Personal/Confidential antipiracy package, formerly available only for microcomputers, is now also available for IBM 4300 and 3080 series and 370 mainframes under IBM's VM/CMS or OS/TSO operating systems and Digital Equipment Corp.'s VAX-11 computers running under DEC's VMS operating system.

According to a company spokesman, the package en-

IT'S 3 A.M. DO ACCESSING YOUR

PROTOCOL. THE END OF THE

Continued from page 130

crypts say the tie provide privacy on the user's disks or over electronic mail. The user controls the encryption process with a key word that can exceed 100 characters and can be changed at any time. Encrypted files can be transmitted between terminals and other computers.

The price of the package ranges between $3,500 and $4,500, depending upon host configuration.

Metier, Suite 505, Three

Bala Plaza E., Bala Cynwyd, Pa. 19004.

COMPUTER ASSOCIATES INTERNATIONAL, INC.
Version 2.0 of CA-Rapo

Computer Associates International, Inc. (CAI) has announced Release 2.0 of its CA-Remote Access Power Support (Rapo) system for users of IBM's VM/CMS operating system.

According to a spokesman, enhancements to the product

allow the user to select, display and manipulate entries in VM/SP spool queues and Power/VSE spool queue entries in IBM's DOS/VSE operating system.

CA-Rapo is said to allow Power/VSE or VM/SP spool files to be printed at remote IBM CICS/VS or Remote Spooling Communications Subsystem-controlled printers. The user can initiate the print required independent of the batch system, the vendor said.

A three-year license for CA-Rapo on the DOS/VSE operating system is $4,500.

Computer Associates International, 125 Jericho Tnpk., Jericho, N.Y. 11753.

VM SYSTEMS GROUP, INC.
Release 2.0, V/Spell

VM Systems Group, Inc. has announced an enhanced version of V/Spell, its interactive spelling checker for IBM Information Centers and

other IBM VM/SP installations. V/Spell adds a Spell subcommand to IBM's Xedit, the primary editor for the IBM CMS component of VM.

According to a spokesman, Release 2.0 of V/Spell increases to eight the number of suppleme...al dictionaries that can be used at one time, and it can handle words up to 32 characters long. Installations can provide a local dictionary containing words unique to the site. The Spell subcommand allows users to check each word in the file being edited against a series of dictionaries.

Release 2.0 of V/Spell is priced at $2,360.

VM Systems Group, Suite 515, 8300 S. 9th Road, Arlington, Va. 22204.

EMPACT SOFTWARE, INC.
Step-X37 enhancement

Empact Software, Inc. has enhanced its Step-X37 package, which was designed to stop abnormal terminations in an IBM MVS or MVS/XA operating system environment.

According to the company, an option has been added that eliminates the condition that occurs when MVS cannot find the primary allocation for a new data set. The product reportedly will intercept the job at the time of abend, find available disk space, allocate the space to the job and continue the job without abending, the company said.

A permanent license for Step-X37 rents between $7,000 and $15,500, depending on the CPU, the vendor said.

Empact Software, P.O. Box 2387, Stone Mountain, Ga. 30086.

OXFORD SOFTWARE CORP.
Pcmainframe Release 1.2.1

Additional emulator board support has been added to the latest release of Oxford Software Corp.'s micro-to-mainframe link software. The package also supports IBM's PC-DOS Release 3.0 operating system, the company said.

Release 1.2.1 of Pcmainframe is an intelligent data transfer system that is said to allow personal computer users to upload and download prestored files to and from an IBM mainframe in a real-time environment.

According to the company, the emulator board now supports IBM's 3270 Personal Computer and IBM Personal Computers using Micropha, Inc.'s Micropha MP01 2270/79 emulator board. It also supports AST Research, Inc.'s AST Mayneforonto and Systems Network Architecture/Synchronous Data Link Control boards and Ideaassociates' Ideacomm

Continued on page 132

3278/79 emulator board, the vendor said.

The price of the product is $9,000 for eight personal computer licenses on IBM's DOS operating system and $12,000 for eight personal computer licenses on IBM's VM operating system, according to the vendor. The cost for each additional micro is $300.

Oxford Software, 174 Blvd., Hasbrouck Heights, N.J. 07604.

INTERNATIONAL BUSINESS INFORMATION SYSTEMS
Utilities for DOS/VSE

International Business Information Systems has announced a series of utility programs for IBM 370, 4300, 3030 and 3080 series mainframes under IBM's DOS/VSE operating system.

The Dump, KSNT, Stat, Open/Shut and KTST programs operate in IBM's CICS/VS environment; Spacemap is

a batch program.

According to a spokesman, Dump provides a hexadecimal dump of a given virtual address, any of 16 specific CICS areas and any of 18 CICS/VSE system areas.

KSNT displays statuses and statistics from terminal, program and file tables.

Stat provides statistical summaries of the items provided in the KSNT individual display. The display also shows system initialization time and provides activity counts by second as well as seconds by activity counts from initialization time.

Open/Shut reportedly allows dynamic opening and closing of files and IBM DL/I data bases by individual file control table identifiers and/or by preassigned groups.

KTST provides a hexadecimal display of individual (keyed) files defined by the CICS file control table. Functions include hexadecimal/decimal and decimal/hexadecimal conversion and the ability to initiate a task at a specified time interval on a list of terminals.

Spacemap reads a Vsam catalog and produces a condensed listing of the most common file specifications.

Each utility program is priced at $300. Discounts are available for purchases of more than one program.

International Business Information Systems, P.O. Box 15780, 828 Royal St., New Orleans, La. 70175.

BOSTON SYSTEMS OFFICE
BSO/C compiler for 6800 and 280 processors

Boston Systems Office (BSO) has introduced a C compiler for Motorola, Inc. 6800 and Zilog, Inc. 280 microprocessors on Digital Equipment Corp.'s VAX line of computers.

The BSO/C is reportedly an enhanced C compiler that is said to permit easier C language programming for embedded microprocessor systems and applications. It includes optimization functions, microprocessor-oriented interrupt and I/O instructions, recursive and reentrant code programming capabilities and symbolic debugging support, the vendor said.

The BSO/C compiler comes with runtime libraries and is priced at $5,000 when bought with BSO's corresponding assembler/debuggers.

BSO, 469 Moody St., Waltham, Mass. 02254.

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INTERACTIVE SOLUTIONS, INC.
Help

Interactive Solutions, Inc. has announced an on-line documentation package for IBM CICS applications. The Help package reportedly gives immediate access to field-level documentation. When the use of a field is questioned or an entry rejected, users press the cursor under the field and hit a Help key. The original screen is replaced with a display describing that field. The enter key restores the screen to its original format.

Permanent license for Help for IBM's OS and DOS operating systems is $9,995 for one CPU.

Interactive Solutions, 140 Rt. 17 N., Paramus, N.J. 07652.

NEC INFORMATION SYSTEMS, INC.
Remote Workstation Adapter

NEC Information Systems, Inc. has introduced a software package that is said to allow any microcomputer that supports Digital Equipment Corp.'s VT100 terminal emulation to act as a remote workstation to NEC's Astra 33-bit minicomputers.

Workstations at remote sites are linked so Astra systems through modems connected by an adapter to the NEC Remote Workstation Adapter controller, the vendor said. Each controller reportedly can support four remote VT100 terminals or emulators. One controller and one adapter costs $3,000.

NEC Information Systems, 1414 Massachusetts Ave., Boxboro, Mass. 01719.

ADVANCED SYSTEMS CONCEPTS, INC.
Status/38

Advanced Systems Concepts, Inc. has announced Status/38 for IBM's System/38 under the CPF operating system Release 6.0.

Status is said to help users discover how system resources are being used. The product reportedly provides inquiries, reports, graphics and charts of data accumulated by itself and the CPF operating system.

The accounting features of Status reportedly track facets of system use. A charge-back system is also included, so users can be billed for their use of system resources.

The price for Status/38 is $1,500.

Advanced Systems, Suite S, 1350 Remington Road, Schaumburg, Ill. 60195.

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curred because of the use of a human analogy," he said.

Hecht said his company actually tries to avoid the use of words such as artificial intelligence or expert systems. "The idea is that machines will do things that human beings normally use machines to do," he said.

Another barrier to wide commercial use of AI is the popular perception that it has a "soft character" or that the technology is not really vital, Hecht said. "Because it has a broad range of applications, AI is often viewed as a solution in search of a problem." He added that the misperception will be overcome as more concrete applications come into use.

On the other hand, he said, inaccurate media reports "have helped to create a distorted view of what the field is about." Because the commercial market does not understand the technology, companies that participate in the market will have to offer training, products and help in applying the technology, Hecht said.

AI will be increasingly used in vertical applications, in which the technology will not so readily be apparent to the user, he said. "Artificial intelligence will become invisible."

Another prerequisite to the growth of AI is the need for experienced people to apply the technology. Hecht said he believes the shortage of knowledge engineers eventually will be met by people entering the field from other disciplines and by the creation of better development tools for AI specialists.

AI-related technology is expected to be an $11 billion industry — or about 5% of the total computer industry — by 1990, according to Arthur D. Little, Inc.

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■ Combat software piracy by requiring that countries seeking access to the U.S. market respect intellectual property rights and, if necessary, consider trade sanctions against countries that do not provide adequate legal protection.

■ Continue efforts to lower foreign barriers to free trade.

■ In the development of U.S. export control policy, strike a balance between national security and commercial interests so as not to place U.S. suppliers at a disadvantage.

■ Lengthen the term of the current research and development tax credit and broaden coverage to include more software.

While the study concluded that the U.S. software industry currently dominates the world market and should continue to do so over the next three years, it noted that foreign governments have promoted development efforts among their domestic companies that have already resulted in success in certain areas.

"The major negative factors affecting the U.S. software industry overseas are likely to be inadequate legal protection of software and restricted access to key foreign markets," the report said. The agency said Japan is likely to become the strongest competitor to the U.S. software industry.

The full report, stock number 003-009-00436-5, is available from the U.S. Government Printing Office, N. Capitol and H St. NW, Washington, D.C. 20401.
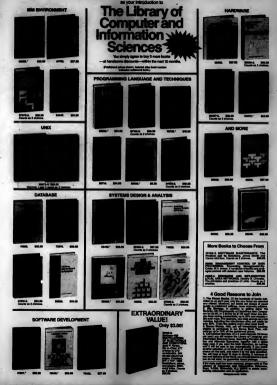
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or does not do in the Unix area may have more influence on the future of Unix than all the moves by all the other players.

A significant portion of Unix watchers says that IBM will wage war against AT&T by ignoring Unix, especially on the large systems end of things.

But a study released recently by International Data Corp. (IDC) has some heartening news for Unix supporters.

Favorable signs

According to IDC, the favorable signs from IBM regarding Unix include:

■ IBM is offering Xenix on its product line. In 1985, Xenix will become System V-compatible, bringing

> *"After experience [with a Unix customer base] IBM will have the specifications to implement a replacement system which bypasses the shortcomings of Unix. IBM might decide on such a bold policy realizing that a replacement [to Unix] would provide the strategic glue to unify its disparate product line."*
>
> — International Data Corp. study

IBM products more closely into line with AT&T's System V standardization efforts.

■ The upgrade from System III compatibility, on which IBM's current Unix product offerings are based, to System V compatibility is easy to do. IBM's positioning with System III

puts it in a comfortable position to upgrade to System V compatibility as the System V base becomes more field-proven and as IBM gains experience with Unix. The fact that IBM chose System III rather than a University of California at Berkeley-based version of Unix places IBM

more closely in line with AT&T.

■ IBM owns 20% of Intel Corp. Intel is heavily committed to Unix and it is expected to complete the port of System V to its 80286 microprocessor in 1985.

■ The spread of Unix does not threaten an established IBM market segment. The proprietary IBM time-sharing systems — TSO and CMS — address DP professionals and not distributed end users. So Unix can address a market segment where IBM has no proprietary product. Thus, by adopting Unix, IBM could take advantage of AT&T's experience in building an operating system for a communicating and portable environment. That would give IBM the means to tie together its different processor technologies.

■ The portability of Unix can work to IBM's advantage. It can be used to attract customers away from another vendor's equipment.

■ Significant market strength could be leveraged against IBM if IBM were not present in the emerging Unix market. AT&T and the scores of hardware and software vendors committed to Unix would be hard to ignore.

■ As the industry focus shifts toward applications, IBM will try to distinguish itself to the end user by quality applications based on a standard operating system. Even IBM does not have the resources to do everything well. Why should it not spend its resources on that which will give its hardware greatest appeal, the applications capabilities?

Policy change possible

If those speculations seem logical, IDC says, look for future IBM products to continue to move toward compatibility with the mainstream of Unix standardization. That's heady news for the Unix aficionado. But wait. Despite the signs that IBM is poised to sanction Unix, IDC warns, Big Blue has the wherewithal to switch strategy in midstream.

IDC notes that IBM has made it clear that its actions are governed by the best interests of, you guessed it, IBM. So if upcoming developments in the Unix marketplace point to a course of action better suited for IBM, look for strategic changes to occur. IDC says that there is debate within IBM over whether it should go strictly with proprietary operating systems. Unfortunately for Unix fans, IDC cautions, many of Big Blue's high-level executives hold with the proprietary strategy.

Finally, IDC conjectures, "IBM has little development experience with Unix or any portable operating system. Offering Unix to the customer base will give IBM a laboratory for learning and observation. After experience in this laboratory, IBM will have the specifications to implement a replacement system which bypasses the shortcomings of Unix. IBM might decide on such a bold policy realizing that a replacement [to Unix] would provide the strategic glue to unify its disparate product line."

As with so many other facets of the computer industry, the cards IBM now holds so closely to its chest will probably influence in a big way the outcome of the Unix game. IBM's moves may hold the key to whether 1985, or very other year, will truly be the year of Unix.

The report is available from IDC, which is located at 5 Speen St., Framingham, Mass. 01701.

COMMUNICATIONS

Users indifferent to office technology wars

DATA STREAM
John Oe
CW Senior Editor

The past year in communications has been dominated by news of AT&T divestiture which has, by its nature, tended to focus concerns on inter-office communications issues. In looking back, however, it is more telling to examine intra-office communications developments to gauge advances in automation.

Here we find that technology continues to outpace the average user. Even in the face of unprecedented shipments of end-user devices, the need to interconnect this equipment has not materialized as rapidly as once expected.

Ironically, the warring proponents of local networks and private branch ex-

changes (PBX) — battling over which technology should be incorporated as the electronic spine in the future office — have come to terms before most users are even prepared to hear the arguments. Now the conventional wisdom is that the technologies will coexist. But today, few are using either.

In fact, while users praise the merits of PBXs that can handle voice and data simultaneously and local networks that can interconnect anything and provide incredible bandwidth, data switches — the real workhorse DP shops rely on to enable users to access multiple devices — go unsung. Data switches are neither new nor sexy. But they do provide a cost-effective and necessary function similar to the baseline functionality of both PBXs and local nets.

What 1984 lacked in user enthusiasm

for intra-office communications data communications technology — measured in products purchased — was made up for by vendors. Most notably, this year AT&T and IBM finally entered the fray.

Local network is no longer a banished word within the hallowed halls of Big Blue. In fact, IBM has been running ads in the industry press explaining its stance on, and approach to local networks.

And it did announce PC Net this year, a broadband network for personal computers. The catch here, though, is that the network software won't be released until sometime next year.

In a statement of direction made after the Cabling System was announced — a building wiring scheme on which IBM said it will base its token passing network — the mainframe manufacturer said it would announce an office net-

Bell exec calls local fiber nets key to ISDN

By James Connolly
CW Staff

CAMBRIDGE, Mass. — The extension of fiber-optic cable into the local telephone loop is an important step toward implementation of an Integrated Services Digital Network (ISDN) by 1990, according to an executive for Southern Bell Telephone Co.

Bell South, a subsidiary of the Bell South Corp. regional holding company, is concentrating on building local fiber networks, rather than intercity fiber trunks, which is an area offering limited growth, according to Richard K. Snelling, executive vice-president for Southern Bell. Snelling spoke recently at the MIT Communications Forum here.

Southern Bell installed 62,000 kilometers of fiber between local central office switches in 1984, and changed its specifications repeatedly, increasing typical bandwidths from 90K bit/sec to 405K bit/sec in just five months, according to Snelling.

That fiber will someday be extended to households to carry integrated communications as ISDN develops, noted Snelling, who said three real estate developers are

interested in installing fiber in major residential developments in Southern Bell's region.

He said that fiber would carry voice,

'Competition drives it all. Competition in the market was what really caused [AT&T's] divestiture, while technology was a factor.'

— Richard K. Snelling, executive vice-president for Southern Bell Telephone Co.

video and data communications, and would be part of an ISDN that develops over the coming years.

One feature of ISDN, if the Federal Communications Commission permits it, would be protocol conversion at the local, central

office level.

"Competition drives it all. Competition in the market was what really caused [AT&T's] divestiture, while technology was a factor," said Snelling, adding that it also should be market forces, particularly the rich U.S. market, that drive the establishment of international standards.

With the replacement of copper cable with fiber, a few all-fiber cities will begin to appear in the late 1980s and on a large-scale basis in the 1990s, according to Snelling.

Next millennium networks

He also outlined how communications networks will appear at several stages into the next millennium.

■ By 1987: Modular fourth-generation central office switches will handle channel switching, circuit switching, more than one million calls an hour, full digital connectivity and dynamic load balancing.

■ By 1990: Intelligent networks with common channel signaling will use more than 400,000 kilometers of fiber in the Southern Bell area, will feature customer

Pactel releases Displayphone for accessing remote data bases

WALNUT CREEK, Calif. — Pactel Communications Systems has announced its Pactel Displayphone, an integrated telephone and data terminal designed to ease access to remote data bases for information such as stock market reports, shop-at-home services, electronic banking and airline schedules.

It reportedly allows the user to exchange data with other Displayphone units and features a speakerphone, automatic redial, speed calling and a directory that can be programmed to display and dial up to 10 two-digit numbers.

The device includes an internal

AT&T 103-type modem operating at 300 bit/sec and an 8K metal-oxide semiconductor random-access memory with a three-day battery backup. It also has a 7-in. monochrome screen with an alphanumeric character set and graphics said to be suitable for bar graph applications.

The telephone plugs into standard RJ11 or RJ13 jacks, and power is supplied by a 3-lb external power supply. The Displayphone features two ports, a printer port and an RS-232C serial port.

Pactel Communications Systems is located at 201 N. Civic Drive, Walnut Creek, Calif. 94596.

Enhanced protocol converter from Perle GSD targets IBM

CHICAGO — Perle GSD, Ltd. has announced a redesigned protocol converter based on the Perle GSD PDS 300/525 for the IBM System/34, 36 and 38.

The PDS 350/525 reportedly replaces an 8-in. diskette drive with a 3-in. drive and incorporates four, eight, 12 or 16 asynchronous ports as well as ports for the host connection and diagnostics. The PDS 350/525 is said to appear to the host as one or two IBM 5251 Model 12 cluster controls units with attached workstations or printers.

The protocol converter reportedly features automatic speed detection,

dynamic terminal selection, menu-prompted configuration, printer passthrough and security disconnect. Options include teletypewriter support, file transfer and auto-call printer support.

According to the vendor, the unit has been enhanced by the addition of two direct memory access channels to facilitate buffer management and inter-processor communications.

Shipments are scheduled for this month. Prices range from $4,750 to $12,500.

Perle GSD can be reached at Suite 507, 600 S. Dearborn, Chicago, Ill. 60605.

COMMUNICATIONS

Ideassociates releases IBM link

BILLERICA, Mass. — Ideassociates, Inc. has announced a second communications card designed to link the IBM Personal Computer, Personal Computer AT, Personal Computer XT and Portable Personal Computer to IBM System/34, System/36 and System/38 minicomputers.

According to the vendor,

the Ideacomm 5251 reportedly supports a twisted-pair or coaxial connection with the IBM systems through IBM 5250 terminal emulation via either a direct connection or an IBM 5251 Model 12 display controller.

Ideassociates also announced the Ideacomm 5251D card, a companion product that replaces the

IBM Monochrome Display Adapter and supports the full 32 attributes of the IBM 5251 screen.

The products will be available in January. The price of Ideacomm 5251 is $896, and the price of Ideacomm 5251D is $496.

Ideassociates is located at 35 Dunham Road, Billerica, Mass. 01821.

control, will include stored voiceprints for universal credit calling.

■ By 2000: Mobile telephone service will be fully deployed, and there will be interactive computer/voice interfaces, almost no copper wiring and increasing use of light-switch technology.

■ By 2010: With a decentralized society, 35% of workers will have their primary work location in the

home, partly due to the decreasing cost of bandwidth. There will have wideband data links to corporate and public data bases, videophones, holographic meetings and flat wall displays.

■ By 2020: With the optical network fully deployed, telecommunications will replace energy as the leading resource. Fiber running into the home will be at least 45M bit/sec and possibly 135M bit/sec.

work within a few years. Until then IBM can stress the data handling capabilities of PBXs from Rolm Corp., the switch vendor that IBM recently acquired.

To complement the data switching capabilities of its PBX equipment, AT&T Information Systems released its first local net this year, the Information Systems Network (ISN). A star topology network that uses twisted-pair wire to support end-user devices and fiber-optic cable between network components, ISN uses what the company calls a short bus to switch packets.

AT&T Information System's ISN was born of the same technology used in that other child of AT&T Technologies' Datakit Virtual Circuit Switch. The products were developed separately within AT&T using the same basic theory developed by Bell Laboratories.

The overlap between the products is embarrassing. The separation in the development and marketing of ISN and Datakit was necessitated by the Federal Communications Commission's Computer Inquiry II decision. That ruling specifies that only AT&T Information Systems, a separate subsidiary, can market nonregulated products directly to end users. AT&T's Datakit, too part of the nonregulated part of the company, must be marketed through a third party. This means, however, that AT&T may be competing with itself for some accounts.

Although there may be some validity to the idea that the entrance of IBM and AT&T will stimulate the market for intraoffice local network-like products, the fact remains that most users do not yet need these products.

The need will arise slowly from the personal computer level, where small departmental networks are springing up to provide peripherals sharing. Given that, consider that probably less than 10% of all personal computers currently used in business are attached to networks. Commonly accepted, sophisticated intraoffice communications systems are still a while away.

SYSTEMS & PERIPHERALS

No free gifts seen for PCMs in new year

By John Desmond
CW Staff

David Martin, president of National Advanced Systems, Inc. (NAS), recently noted that salesmen were spending one hour on sales calls prior to the reorganization and layoffs at Storage Technology Corp. (STC). Now, they spend two. "The first hour is to explain what happened to STC, and the second hour is to sell," Martin said.

Users of IBM-compatible mainframes and peripherals may be running scared as a result of STC's problems and perhaps with good reason. With product cycles ever shortening, the ability of plug-compatible manufacturers (PCM) like STC to compete is being clipped.

The Gartner Group, Inc. recently stated that product life cycles have dropped from an average of 48 months in 1975 to 16 months in 1983. The ability of PCMs to respond, meanwhile, has increased from an average of nine months in 1976 to 18 months in 1983. As a result, the PCMs' "profitability window" (life cycle minus response time) has been reduced from 39 months in 1975 to 18 months in 1983, according to the Stamford, Conn.-based consulting firm.

MVS/XA an example

A specific example is the MVS/XA operating system, which IBM announced three years ago for its high-end systems. The PCMs took 16 to 18 months to respond with XA equivalents, hurting their ability to compete with IBM.

Martin responded that XA is an exception, a technological breakthrough that may happen once every six to eight years. The PCMs take longer to match breakthroughs, but Martin said more routine product announcements can be matched in much less time. He acknowledged that product life cycles are shrinking due to a constant push for new technology, but said the true test for competitiveness should be whether a PCM has the ability to respond.

Perhaps it is true, as Martin suggested, that the successful competitive formula for PCMs has changed. In the 1970s, PCMs tried to achieve vertical integration. Each company sought to have design, manufacturing, sales and service staff. In the 1980s, IBM and its competitors are entering into partnerships with other companies and getting away from integration in order to cut costs. Examples of partnerships include NAS and Hitachi Ltd., Amdahl Corp. and Fujitsu Ltd. and IBM and Rolm Corp.

Product partnership

"The model of the '80s is product partnership," according to Martin. "I don't think STC represents a model for what's happening to the rest of the industry." In his view, STC took on too many vertically integrated projects and became too diversified.

What will 1985 bring for the rest of the IBM-compatible vendors? Of course, the best time to make predictions about 1985 will be next Christmas. But right now, the chances that the PCMs will enjoy any dramatic relief from IBM marketing pressure

Visa expands processing power with addition of IBM 3083 EXs

By Kathleen Sullivan
CW West Coast Bureau

SAN MATEO, Calif. — Almost two years ago, Visa International laid the plans for a three-year, $16 million expansion of its electronic transaction processing and communications services. In mid-October, Visa said it had accomplished a key step in the process by replacing the mainframe computers in its operations center, which are located here and in McLean, Va.

At present, all its new processors are functioning, said Roger Peirce, Visa's general manager of systems development.

Included within its expansion scheme was a plan to convert the company's asynchronous communications system to IBM's System Network Architecture (SNA). According to Peirce, Visa has reached the mid-point in its implementation of SNA.

In the process of replacing its IBM 4341 Model Group 12 mainframes with four IBM 3083 EX systems, Visa more than doubled its processing power, Peirce said.

Using the IBM 3083s, Visa will be able to handle about 400,000 transaction authorization inquiries and responses an hour and 10 million settlement items a day, he said. Before the changeover, the firm's capacity was limited to 178,000 messages an hour and 6 million settlement items per day.

Peirce said the 3083s represent a "logical upgrade in terms of current technology and capacity" for Visa. While Peirce said the firm did some evaluation of competing IBM-compatible systems offered by Amdahl Corp. and National Advanced Systems, Inc., Visa did not discover any significant

Image processing system out

ALAMEDA, Calif. — Integrated Automation, Inc. has announced the Series 200 optical laser disk storage and electronic image processing system. For automating the storage, retrieval and distribution of engineering drawings and technical information.

The Series 200 system consists of processors from Digital Equipment Corp. in combination with a 12-in. optical disk, each capable of storing 1G byte of data, or approximately 20,000 letter-size pages. The company's Optical Disk Auto Changer stores up to 100 optical disks.

In addition to storing engineering drawings, the Series 200 can store computer-coded design and manufacturing or word processing-generated data, the company said.

The system is available in three configurations. The Series 200A-C is based on the DEC Microvax I and includes an aperture card scanner, image aperture, dual-image processor, an optical disk read/write unit, two terminals and a Versatec, Inc. 7224 24-in. plotter. The price for Series 200A-C is $478,000, according to the company.

The Series 200A-C/E is based on the DEC VAX-11/750 and includes an image retrieval cluster, four terminals, a Versatec 7236 36-in. plotter and a remote cluster communications interface. The price for the Series 200A-C/E is $756,000.

The high-end Series 200B is based on the DEC VAX-11/780 and includes an additional two Versatec 24-in. plotters, a total of 14 terminals and an Optical Disk Auto Changer. The price for Series 200B is $1.2 million, according to the vendor spokesman.

Additional information is available from Integrated Automation, which is located at 1301 Harbor Bay Pkwy., Alameda, Calif. 94501.

Burroughs unveils free-standing ATMs
Targets supermarkets, gas stations, convenience stores

DETROIT — Burroughs Corp. has introduced the CA 7100 Quick Cash, a free-standing, lobby-style automatic teller machine (ATM) for dispensing cash and providing account balances, aimed at supermarkets, gas stations and convenience store markets.

The CA 7100 can complete a withdrawal transaction in 10 seconds, according to a spokesman for the company. The ATM features a 9-in. video screen for displaying messages and instructions, six function keys, a 15-key alphanumeric keyboard and a single magnetic card reader.

The CA 7100 uses emulation software to have the system emulate competitors' ATMs. Emulation software is available for Burroughs' RT 660/RT 760; IBM's 3624; Docutel/Olivetti Corp.'s 2300; NCR Corp.'s 1780; and Diebold, Inc.'s 910.

The device can also be connected to surveillance cameras, alarms, monitors and automatic dialers. The product is available with up to three currency feeders, a spokesman said. Each cash cassette reportedly can dispense 1,800 U.S. notes. A backup system is said to maintain memory for 72 hours following a power failure.

In multiple ATM sites, one CA 7100 can coordinate transactions, control data encryption and handle communications with the host processor for the master and up to two CA 7102 slaves.

The receipt printer prints 40 alphanumeric char./line, with up to 16 lines per receipt. The CA 7100 has a capacity of 4,000 receipts. The audit printer provides a 56-char. line and contains enough paper to print 8,000 transactions before replenishment, the company said.

The price for the CA 7100, to be available for delivery in the first quarter of 1985, is $14,700 for the base unit or $12,500 for a slave unit that ties to a host, according to the vendor.

Additional information is available from Burroughs, which is located at 1 Burroughs Place, Detroit, Mich. 48232.

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icant reasons for changing vendors.

Peirce said Visa purchased the 3083s "with some expectation of upward growth" since the system — in in the early stages of its technological life cycle.

In each of the operations centers, Visa now has three computer systems in place: two 3083s and one 4341. One of the 3083s, which is used

for real-time processing, is primarily dedicated to processing authorization transactions. The system has 8M bytes of main memory and uses IBM's Transaction Processing Facility.

The other 3083 in each data center is used for clearance and settlement processing, Peirce said. These systems have 16M bytes of main memory and use IBM's OS/VS1 running under VM. Visa plans to convert to MVS in the second quarter of 1985.

Each operations center uses its remaining 4341 to relieve the new systems of several off-line batch processing tasks. In California, the remaining 4341 will be used to handle switching and processing for interlink, a direct debit, point-of-sale program being developed by the five largest banks in California. The service is scheduled to go into effect this month.

Because of the nature of Visa's applications, Peirce explained, each data center

is configured as a duplicate of the other, so that in the event of a natural disaster or systems failure at one location, the second center will be brought up within minutes to take over.

Although Peirce said the changeover was transparent to its members, he said Visa did encounter a problem that resulted in a four-week delay in the installation of the real-time system in its California center. Peirce said IBM had implemented the operator

console differently on the 4361 than on the 3083. The software "didn't work properly and was full of bugs," Peirce said. So Visa analyzed and reported the incompatibility to IBM, which eventually resolved the problem.

Visa is also in the process of rewriting all its application programs, Peirce said. By 1986, when the project is scheduled for completion, Visa will be able to expand its settlement system to "15 times its current capacity, the company said. In addition, the firm's settlement and authorization systems will be able to share the same communications network, which will lower costs.

The firm has also undertaken what Peirce called the "expensive, laborious and tedious" task of converting to IBM's SNA. He estimated that the conversion, which entails extensive software changes in all the components of the system, will represent about $3 million of Visa's $16 million outlay. But that figure does not include training or new circuit design that will be required, he said.

So far, Visa has converted its traveler's check service completely to SNA. The firm has completed the software conversion for its clearing and settlement system and is now in the process of converting its Series 1 systems, which serve as the access point to the network, to communicate in SNA. By February, Visa will begin field tests to prepare to convert its authorization system, Peirce said.

PCM from page 141

appears slim.

Amdahl and NAS, both of which are heavily influenced by their Japanese hardware suppliers Fujitsu and Hitachi, respectively, may face the short-term problem of how to sell supercomputers manufactured by their Japanese suppliers.

But the real challenge to NAS and Amdahl will not come until IBM unveils its much-publicized Sierra line of mainframes. Then the question will be whether both companies are capable of meeting the high R&D costs to match IBM's top-end mainframe. Of course, much depends on how impressive IBM makes the Sierra.

The vendors competing in the mid-range of IBM's mainframe line also face a tough 1985. In the fourth quarter, IBM significantly enhanced the performance of its 4361 and 4381 processors.

Whether companies like IPL Systems, Inc. and Cambex Corp., which are already feeling the bite of increased IBM competition, can match the performance of the 4381 Model Group 3 and 4381 Model Group 3 remains to be seen.

MICROCOMPUTERS

SMALL TALK
Eric Brown
On new beat

Forecast in '85: Guessing game

I magine a machine built around Motorola, Inc.'s 68000 chip, with a high-resolution color display and a user interface much like Apple Computer, Inc.'s Macintosh, selling for under $1,000, complete with hard disk drive.

Reports have it that Jack Tramiel's Atari Corp. will unleash a million of these little dynamos on a grateful world in 1986, making this the year in which the high-performance micro really becomes a commodity item.

1986 also is supposed to be the year for laptops, local-area networks, well-tailored micro-to-mainframe links, AT&T's Unix, project management on micros, desktop presentation graphics, the mouse, operating environments and a host of other paraphernalia.

So, of course, was 1984.

As we all take a deep breath and head into 1985, it is a good time to examine why so many predictions for the micro industry have wandered so far afield.

Lack of forecasting ability

One reason is the lack of true forecasting expertise. Market clairvoyance is spread through the industry like the upper Missouri River in flood, a mile wide and an inch deep. This does not prevent a continuing stream of half-baked, scattershot proclamations about the product intentions of IBM or the other big players from "experts" who half their own occasional triumphs. (As the saying goes, even a broken clock is right twice a day.)

Another stumbling block is that manufacturers still generally do not deliver what they promise on schedule. As one prominent example, Tramiel has built his meteoric career on pioneering both low-cost manufacturing and vaporware.

But a greater factor is general turmoil in the industry, which is slowly settling down but still packs a lot of random noise and motion. A look backwards shows how much has changed during the past year.

One year ago

In early January 1984, the IBM Personal Computer AT was merely a dubious rumor floating around under the Popcorn label. The highest-performance desktop machine making a bid for the mainstream was Tandy Corp.'s Model 2000. But like the dozen other machines based on the Intel Corp. 80186 chip that were also making their debuts, the Tandy 2000 never set the market on fire.

Hardware prices were high. A Personal Computer XT with 256K bytes of internal memory went for roughly $6,000 retail, almost twice what you would pay now after a little shopping, and IBM could not roll them out fast enough.

Rumors were flying that IBM would soon put some version of Unix on the Personal Computer. The single-user PC/IX made its debut in mid-January and then vanished from the market.

See YEAR page 148

Desktop manager debuts

Smartdesk IBM-based turnkey system features word processing, calendar, calculator functions

ATLANTA, Ga. — Jacore Systems has released Smartdesk, a turnkey desktop management system that incorporates an IBM Personal Computer XT or Personal Computer AT.

Smartdesk software reportedly includes word processing, calendar, phone book, clock and calculator functions. The package allows a user to move from an application such as Lotus Development Corp.'s 1-2-3 to Smartdesk software by pressing one function key, the vendor said.

Smartdesk's word processor is said to allow an executive to draft memos and letters, print the documents or save them in a confidential file. Its calendar feature tracks appointments and provides space for notes and reminders concerning specific meetings, the vendor said.

The phone book stores telephone numbers and dials them, using coded with a modem automatically dials a number, according to the vendor. The clock reportedly displays the current time and has an alarm function that beeps when set.

A Smartdesk system includes a monochrome display, IBM's PC-DOS 3.0 operating system, communications software, an internal modem, a phone connector, cable and IBM 5251 terminal emulation capability that allows a user to connect to an IBM System/36 minicomputer.

A Personal Computer AT system with 20M bytes of storage costs $8,375, and a Personal Computer XT system with 10M bytes of storage sells for $6,895.

Jacore Systems is located at 1640 Powers Ferry Road, Marietta, Ga. 30067.

Digital Research announces Cobol compiler for IBM micro

MONTEREY, Calif. — Digital Research, Inc. has announced DR Level II Cobol, a Cobol compiler designed for the IBM Personal Computer.

The compiler reportedly has been certified by the Federal Software Testing Center and meets full American National Standards Institute 1974 specifications for high-level compilers.

According to the vendor, the product includes two utilities: Display Manager and Access Manager. Display Manager allows programmers to create a number of screen displays, Digital Research said. Access Manager reportedly is a file-access method

that enhances maintenance of data records.

DR Level II Cobol completes the Sieve of Eratosthenes, an algorithm for finding prime numbers, in 311 seconds and MS-Sieve, a modified version of the sieve, in 40 seconds, the vendor said.

The compiler has no runtime licensing fee, meaning software developers who develop applications with the compiler do not have to pay a license fee to Digital Research.

DR Level II Cobol is priced at $700.

Digital Research is located at Box DRI, Monterey, Calif. 93942.

Lotus files third suit over copying

DECATUR, Ill. — Lotus Development Corp. has filed suit in the U.S. District Court for the Central District of Illinois against Mueller Co., Inc. for allegedly producing unauthorized copies of Lotus' 1-2-3 integrated package.

The suit asked for compensatory damages of $800,000 for right illegal copies of the product, punitive damages and statutory damages of $1 million each and any profits

made from the activity, according to Bernard J. Been, senior litigation partner at the Boston firm of Testa, Hurwitz and Thibeault.

Bons said that Lotus' special investigative unit, formed in 1984 to monitor illegal copying of its products, uncovered the activity.

Jim Manzi, president of Lotus, maintained, "Lotus actively supports industry efforts to develop new methods of software authori-

zation. However, in instances where individuals intentionally violate our rights for economic gain, we will vigorously defend our rights by using all legal means available."

Mueller, a maker of water fitting manufacturer, is the third company against which Lotus has filed suit this year. Earlier suits against Rixon, Inc. and the Heath Group were settled out of court.

Need for data backup often ignored

By Richard Gorgens
Special to CW

Corporate computer centers provide mainframe data backup as a standard procedure, regularly copying data onto magnetic tape and storing extra copies in

Gorgens is president and general manager of Alloy Computer Products, Inc., a Framingham, Mass.-based firm that manufactures personal computer peripherals.

secure, off-site locations. But similar procedures are seldom used with personal computers, for which the need to secure data is just as important.

Catastrophes such as fires, hardware failures, damaged disks and errant commands pose as much potential danger to desktop computers as they do to mainframes.

Most personal computer users realize the fallibility of floppy disks, and they often make backup copies. But many personal computer users do not back up

See COPY page 148

FINALLY. HELP FOR THE DATA CRAZED.

Introducing Cypress,™ Cedar,™ and Juniper.™ Three fast, friendly, infinitely applicable desktop ideas from ROLM.

It comes as no surprise that people react to technology differently. Dyed-in-the-chip techies thrive on it. True non-believers avoid it instinctively.

Now you can please all of the people all of the time. Honest.

Say goodbye to complicated log-on codes. Just push a button

and — whoosh! — travel all the way to a data base, talk to a mini or access your IBM mainframe.

Say hello to speakerphones, phone books, message takers and calculators. Built right in.

If you want to take snapshots of data in your mainframe, there's Cypress. It's as easy as Point & Shoot. It's a smart little ASCII terminal integrated with a fully-featured digital phone.

Need a 512 KB, fully IBM-compatible PC that runs programs like pfs:graph," the IBM Assistant Series," 1-2-3," and lets you mini-network through your phone line? Cedar's the one.

Already in love with your IBM®PC or XT but crave the affections of Cypress? Ask for Juniper. Its one slot adaptor card lets your system keep growing. And growing.

Of course, only ROLM has Cypress, Cedar and Juniper. Because only ROLM has the sys-

tem to run them on. At its heart is the CBX II, a breakthrough communications controller that manages voice and data over standard telephone wire. Simply, brilliantly and cost effectively.

And ROLM has the technical edge, the operational track record and the worldwide service and support organization to please even the toughest customer.

So phone ROLM. High tech. Not high anxiety.

ROLM

Microgate emulators available for IBM micro

AUSTIN, Texas — Gateway Microsystems, Inc. has introduced a series of Microgate terminal emulation products for the IBM Personal Computer AT.

The Microgate/WS is said to be an integrated workstation emulating IBM 3780, 3780 and 3270 series terminals. It reportedly provides both batch and interactive micro-to-mainframe communications. Microgate 3780/3780 is an IBM 3780/3780 data communications terminal emulator that uses Binary Synchronous Protocol, according to Gateway.

The Microgate II reportedly is a biosynchronous communications subsystem with a programmable interface to Micro-Focus Cobol and IBM's PC Cobol, compiled Basic and Pascal and assembly languages.

The Microgate 5530 is said to be an enhanced emulator of the Tandem Computers, Inc. Model 6530/20 terminal. The Microgate 940 emulates the Texas Instruments, Inc. Model 940/981 terminal, allowing personal computers to be used on TI's DBMO and Business Systems series minicomputers, the vendor said.

The Microgate 940 is priced from $250 to $496; Microgate 5530 from $495 to $1,095; Microgate II, $895; Microgate 3780/3780, $895; and Microgate/WS, $995.

Gateway Microsystems is located at Suite 105, 9601 Capital of Texas Highway N., Austin, Texas 78759.

Research software announced

EUGENE, Ore. — Economic Software, Inc. has introduced Research, software that integrates data base management with color graphics and statistical analysis capabilities.

The package reportedly permits users to plot on one screen several different data types, such as correlations between daily interest rates, weekly money supply and monthly inflation rates, Economic Software said.

Research also generates a calendar of days automatically and allows data transfer from various programs, including Lotus Development Corp.'s 1-2-3, the company said.

The software runs on the IBM Personal Computer, Personal Computer XT and Personal Computer AT with 256K bytes of random-access memory.

The program is provided with 325 works of data on 40 major economic measures and is priced at $495. A demonstration diskette is priced at $17.95.

Economic Software can be reached at P.O. Box 10925, Eugene, Ore. 97440.

S-100 units gain MS-DOS version

NEW YORK — Lifeboat Associates has introduced SB-86, a version of Microsoft Corp.'s MS-DOS 2.11 operating system for computers based on the S-100 bus architecture. SB-86 reportedly is compatible with IBM's PC-DOS and runs on two CPU boards, the CPU 8085/88 and the CPU 86/87, made by Compupro, Inc. located in Hayward, Calif.

Lifeboat said that its entire line of MS-DOS software — including compilers, assemblers, linkers and business applications such as WP and spreadsheet packages — is available immediately for the new operating system.

The SB-86 requires the CPU card, a Compupro System Support 1 card, a Disk 1 or 1A controller and disk drive and at least 64K bytes of 24-bit addressable random-access memory, the vendor said. The system is said to support both interrupt-driven and noninterrupt-driven ones a I/O.

The SB-86 is priced at $275. Lifeboat Associates is located at 1651 Third Ave., New York, N.Y. 10128.

MICROCOMPUTERS

SOFTWARE

POLYGON SOFTWARE CORP.

Easypath 1.0

Polygon Software Corp. has announced a facility that allows users of IBM Personal Computers and compatibles to locate files in subdirectories other than the ones they are working with.

Easypath 1.0 reportedly allows use of the hierarchical subdirectory structure in IBM PC-DOS and Microsoft, Inc. MS-DOS without copying files back and forth. Search paths reportedly can be specified separately for particular files or for groups of files.

The product is said to come with predefined specifications for most major programs and to require PC-DOS or MS-DOS 2.0 or higher.

The list price is $100.

Polygon Software, 363 Seventh Ave., New York, N.Y. 10001.

PRO/TEM SOFTWARE

Notebook II

Pro/Tem Software had introduced its Notebook II data base management system for the IBM Personal Computer line and for the Hewlett-Packard Co. HP 150 and HP 110.

Notebook II reportedly includes a text editor with word wrap, automatic reformatting and screen update. It is said to be able to read files from word processors and public data bases and to accept control and extended characters.

Each Notebook II record is said to be able to include up to 28,000 characters and up to 50 fields.

Field and records sizes are not predefined, the vendor said.

Notebook II is priced at $189, according to a vendor spokesman.

Pro/Tem Software, 2363 Boulevard Circle, Walnut Creek, Calif. 94595.

DURANGO SYSTEMS, INC.

Poppy OS

Durango Systems, Inc. has released Poppy OS, which allows Microsoft Corp.'s MS-DOS programs to run under Microsoft's Zenix operating system.

Poppy OS allows the MS-DOS system calls to speak to the Xenix interpreter, thus enabling MS-DOS-based software to function on the Durango Poppy 286/186 Xenix-based systems. Poppy 286/186 supports up to 16 users with a multitasking operating system.

Poppy OS allows users to run single-user MS-DOS applications programs — such as Micropro International Corp.'s Wordstar, Microsoft's Multi-Plan and Ashton-Tate's Dbase II on a multiuser system.

Poppy OS costs $200.

Durango Systems, 3003 N. First St., San Jose, Calif. 95134.

McDONNELL DOUGLAS SOFTWARE

Tym/Vsam

McDonnell Douglas Software has introduced Tym/Vsam for the IBM Personal Computer AT/370.

Tym/Vsam reportedly offers users most functions of IBM's Vsam mainframe software, including data storage and retrieval capabilities. It is said to allow the AT/370 to be used as a workstation for the development and testing of programs.

Tym/Vsam also is said to free users from having to return files to the mainframe for testing and to support random or sequential storage and data retrieval.

Tym/Vsam costs $695.

McDonnell Douglas Software, 20705 Valley Green Drive, Cupertino, Calif. 95014.

NEC INFORMATION SYSTEMS, INC.

DR Draw, DR Graph versions

NEC Information Systems, Inc. has announced versions of Digital Research, Inc.'s DR Draw and DR Graph for NEC's Advanced Personal Computer (APC).

The APC's graphics capabilities reportedly allow users to take full advantage of the two products.

DR Graph can be used to create graphs and charts from information in data files, the vendor said. It reportedly also can create line, bar, pie, step, stick and scatter graphs.

DR Draw can be used for creating presentation-quality charts and diagrams, NEC said.

DR Graph is priced at $295. DR Draw is priced at $395, the vendor said.

NEC Information Systems, 1414 Massachusetts Ave., Boxborough, Mass. 01719.

MICROCOMPUTERS

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hard disks. Backing up even
a small, 10M-byte hard disk
can require more than two
dozen floppies. The inconve-
nience deters most users.

Cartridge tape drives that
provide adequate backup for
micros have been available
for several years. They cost
about the same as a hard disk
drive, and some users consid-
er the price to be high.

Users who keep vital data
on hard disks should consid-

er the value or replacement
cost of the protected data.
When users investigate back-
up capabilities, they should
look for:

■ Data capacity. The
backup medium should hold
all data on one or — at most
— a few volumes.

■ Data transfer speed. A
backup should not be time-
consuming.

■ Cost. Cost consider-
ations include the cost of
both the media and the de-
vice.

■ Available software sup-
port. A backup device should
provide the capabilities a
user needs.

The standard for micro
backup devices is the car-
tridge tape drive. The physi-
cal design provides storage
capability in a package the
size of a paperback novel.
Cartridge tapes range in ca-
pacity from 10M to 50M
bytes and cost $36 to $45
each.

During the past year, sev-
eral removable cartridge
units that use hard or floppy
disks have been introduced.
The products now available
have limited storage capaci-
tie and cost two to four
times more than higher ca-
pacity tape cartridges.

Users interested in car-
tridge tape backup have sev-
eral choices. Cartridge tape
drives operate in two modes,
start-stop and streaming.

Start-stop drives, the old-
er of the two technologies,
physically start and stop the
tape for each recording. This
allows the controlling soft-
ware to write a series of indi-
vidual files to the tape. The
penalty is a slow transfer
rate.

With streaming tape
drives, the tape moves con-
tinuously, streaming across
the tape head. This allows
faster data transfer and
greater storage capacity.

The newest generation of
streaming cartridge tape sys-
tems have software to pro-
vide complete file-oriented
operations while essentially
keeping the tape streaming.

The final step toward se-
curity lies with the user. Us-
ers must develop a set of pro-
cedures to ensure that data is
backed up, that copies are
kept both in the office and
off-site and that proper cata-
loging lets users know where
the data is when they need it.

YEAR from page 143

light, apparently forever.

A year ago Apple was still
announcing products for the
Apple III. More importantly,
it was busily leaking details
of the Macintosh, creating
tremendous interest and con-
siderable debate about
whether the machine would
be suitable for the corporate
environment.

Also last January, the in-
dustry was watching AT&T
slowly wheel its guns around
toward the computer mar-
ket. In 1985, we are still
waiting for signs of a suc-
cessful attack by the giant
firm, with most interest in
the voice/data workstations
now poised for entry.

Twelve months ago, there
were many more micro com-
panies but no cheap desktop
laser printers, no next-gener-
ation integrated packages
such as Lotus Development
Corp.'s Symphony, almost no
IBM-developed micro soft-
ware and less "mindware."
Sometimes it seems a long
time ago.

COMPUTER INDUSTRY

Tandem moves to reposition itself

Aims to hold down costs, put low-end system on market

By David Olmos
CW Staff

PALM SPRINGS, Calif. — After broadening its product line and enacting cost-cutting measures and tighter management controls last year, Tandem Computers, Inc. is aiming to recapture the momentum it seemed to be losing.

"We grew our people faster than our revenues last year," James Treybig, Tandem's president and chief executive officer, admitted in a recent interview here. "The fundamental thing we're doing is not hiring people until our revenues catch up."

At the same time, Treybig said, the company, which manufactures fault-tolerant, on-line transaction processing systems, has "moved to reposition ourselves and offer low-end systems as well [as high-end ones], which was something we should always have done." He said the company's strategy now is to offer a broader range of products while striving to maintain its position in larger systems.

Financial performance improving

Tandem's financial performance has been unsteady during the past couple of years. With revenue growth slowing and operating margins down, the company began about a year ago to increase its focus on costs and profitability. The number of employees has been reduced, although the company has increased its sales force.

Industry analysts who follow Tandem said the near-term prospects for the company are good.

"They seem to be determined to get back into the mainstream of major growth and get close to their historical margins," said Fred Cohen, an analyst with L.F. Rothschild, Unterberg, Towbin, a New York brokerage firm. Cohen said the company could have have been faster in improving its hardware and reducing its costs.

Treybig said Tandem had a strong fourth quarter for the period ended Sept. 30, reporting a 30% increase in revenue and a 35% gain in profit over the year-earlier period. "If we have good growth this quarter, then we'll be back to approaching our historical margins," he said.

See TANDEM page 160

Informatics to counter losses with organizational changes

By Kathleen Burton
CW West Coast Bureau

WOODLAND HILLS, Calif. — There is a newly intensified corporate tone in evidence these days at Informatics General Corp., an information processing services and software company attempting to recover from severe financial losses sustained in 1984.

To do so, and to meet its goal of becoming a $1 billion company by 1990, Informatics is reshuffling management, revamping its corporate strategy and repositioning several newly announced products to target the microcomputer market, including executives interviewed here recently.

Other organizational changes include selling ailing divisions and repositioning languishing product lines, such as insurance, to target the micro market. "We're getting back to basics," said Walter F. Bauer, the firm's cofounder, chairman and chief execu-

tive officer.

Informatics posted depressed financial figures for 1984. Profits fell, and net income plummeted 87% to $846,000, compared with $4.2 million for the same period in 1983. The reasons, according to company insiders, were losses of $4 million in the company's $30 million life insurance operation, $2 million in the $34 million applications software products group and flattened sales of its flagship Mark V applications development product. Industry analysts indicated that Informatics' poor financial showing last year was due to a chronic lack of focus. In the past, Informatics has offered a potpourri of services, ranging from customized programming to project management and systems, to a widely diversified array of customers including Fortune 1,000 corporations, the federal government and small businesses.

See RECOVER page 158

ITT consolidates credit divisions to offer expanded finance service

By Peter Bartolik
CW Staff

ST. LOUIS — Through ongoing consolidation of various credit divisions, ITT Corp.'s ITT Commercial Finance group hopes to build its early lead in retail computer financing into a position as the dominant one-stop financing service, including lease underwriting, for business computer equipment sold at the retail level.

The credit group, an operating unit of the $6 billion ITT Financial Corp.,

over recent months has absorbed four divisions of the former ITT Industrial Credit Co. under the direction of Melvin P. Brown, the Commercial Finance group's president and chief executive officer.

In a recent interview, Brown said the objective of the consolidated operation is to provide full-service commercial financing to leading computer retail operations. Those services currently provide about one-sixth of the

See ITT page 159

Absence of tax reform may disappoint industry in '85

INDUSTRY INSIGHT
Peter Bartolik
CW Senior Editor

The most significant business-pertinent policy issues raised recently in Washington, D.C., are, first, the federal budget and, second, tax reform.

The Reagan administration cannot seem to get its act together on a comprehensive budget reduction package and therefore is going to have a big problem trying to sell a tax simplification package.

The waffling and wavering that has dampened Cabinet-level budget meetings leaves the impression that the executive branch is running around headless. The inability to develop a comprehensive budget package with a military budget cut significant enough to make it salable

in Congress can only detract from the momentum and leadership that should be present in the White House during the beginning of a second presidential term.

Trade groups call for reform

Recently, the American Electronics Association joined with other major national trade associations to call for a budget freeze, including a freeze in defense spending.

While many people see a budget cutback and tax reform ideally going hand in hand, the folly being played out in the budget process will undoubtedly carry over to the tax-writing process. Where the lack of leadership results in special dispensations in the budget, so surely will special interests exert an opening and flock to influence a new tax act. The end result will be more than likely turn into another morass of loophole-ridden amendments, leaving the tax code in even worse shape than at present.

Unless the government gets its house in order, 1985 could turn out to be a very disappointing year for American industries.

A fatality earlier this summer stemming from chemicals located at the M/A-Com, Inc. gallium arsenide semiconductor laboratory was in no way culpable, according to a two-bal report the company said it has received from the U.S. Department of Labor's Occupational Safety and Health Administration (Osha).

Joseph C. Bothwell, senior vice-president of the Burlington, Mass., company, said he was told by Osha that the death of employee John Zemotel from the inhalation of arsine gas in June was not job-related.

However, as a result of an intensive investigation following the fatality, Osha issued two citations al-

leging inadequate records of baseline airborne monitoring for inorganic arsenide and for concerns over certain written procedures, eyewash facilities, housekeeping and training programs. "Neither of these citations is related to Mr. Zemotel's tragic death," Bothwell said.

Entered lab without authorization

Zemotel reportedly entered the laboratories June 11 without authorization and inhaled arsine gas that was stored in a cylinder. He went into a coma later in the day and died on June 22.

M/A-Com had initially termed the death a possible suicide but later retracted its statement following complaints from Zemotel's relatives.

The Osha report, which has not yet been received in final written form, followed an intensive investigation report from the Massachusetts Department of Occupational Hygiene.

Intercompany discrepancies yield costly export errors

OUTSIDE LINES
Arthur Bardenhagen
and Joseph Coleran

First of a two-part article

Manufacturers of computer hardware and software expend so much effort making and marketing their products that they are not always aware that their work is sometimes unwittingly sabotaged by other units of their companies, thus costing the companies money. This occurs most often, perhaps, when the manufacturers export their products.

How do we know all this? In the first seven months of 1984, Irving Trust Co. made nearly 21,000 payments to a variety of American exporters under letters of credit issued by overseas buyers of their products. In order to obtain payment under these credits, the exporters had to present the bank with various documents showing, among other things, that they had shipped the goods they said they would.

Records of the presentations made by these exporters indicated that 34.3% contained discrepancies of one kind or another. In other words, in more than one case in three the exporters erred in preparing the documents or else did not provide all those that were required. This experience is neither unique nor unusual in the banking industry.

What was the result of these errors? In a few cases the exporters lost their sales altogether. Because of discrepancies in the documents, the overseas buyers canceled their orders.

Usually, however, the discrepancies were corrected, and the sales were consummated. Even so, the exporters were not paid until the discrepancies were rectified and thus lost the use of their money for a day, a week, even two weeks or more. And often they were charged a fee. Over the last few years, banks have routinely levied such fees when presented with documents that contained discrepancies that could not be corrected and on which waivers had to be sought from the goods' importers.

On Oct. 1, the International Chamber of Commerce affected changes in the Uniform Customs and Practice for Documentary Credits, the rules governing the use of letters of credit in international trade. Some casual observers may think that these changes will reduce the discrepancies banks find so often in this area. We think no such thing.

In general, the changes merely streamline the use of letters of credit in international trade and recognize current practices fostered by the use of new technologies. For example, they sanction the use of photocopies, in lieu of original documents, as well as facsimile transmissions and other means of electronic communications.

The fact is a reduction in errors can only be achieved by exporters themselves. Before studying their most common mistakes, let's look briefly at letters of credit and how they are used.

In international trade, an exporter may wish to be paid as soon as he ships his goods, while the importer may not wish to make payment until he has received them. A letter of credit serves to reconcile the interests of both parties.

It is a binding agreement that specifies what the exporter is to ship, what is to be paid for the shipment, when it is to be paid and any other conditions on which the buyer and seller agree. In addition, the letter of credit guarantees that money is available to pay for the shipment.

The letter of credit is is-

Bardenhagen is a vice-president in the Trade Finance division and Coleran is a vice-president in the Credit Services division of Irving Trust Co. in New York.

"I RELY ON AST FOR

Earnings adjustments mark Kaypro's fiscal statement

Refusal to reveal fourth-quarter figures could mean problems, analysts say

By Kathleen Burton
CW West Coast Bureau

SOLANO BEACH, Calif. — Portable computer manufacturer Kaypro Corp. recently released its annual financial statement without revealing fourth-quarter results that wiped out a $10 million profit built over the first nine months of the fiscal year.

Kaypro reported a $307,885 loss for the fiscal year ended Aug. 31 after a series of unspecified year-end earnings adjustments. Kaypro officials would not reveal fourth-quarter financial figures or disclose earnings adjustments made to figures in the earlier periods.

Kaypro reported earlier that it expected to break even for the year. For the first three quarters, Kaypro reported net income of $10 million, compared with a 1983 net income of $8.5 million.

A company spokesman

said Kaypro is now investigating an unexpected end-of-the-year inventory adjustment. Earlier in the year, David Kay, Kaypro's director of marketing, claimed that several million dollars of inventory parts were missing, possibly because of a theft from a circus tent on Kay-

pro's grounds, where the parts had been stored.

Management problem?

Bob Katzive, vice-president of Disette Group Concepts, Inc., a market research firm in Palo Alto, Calif., said Kaypro's secretiveness about the details of the write-down, its late Securities and Exchange Commission filing and restatement of profit margins suggest a fundamental management problem.

"It indicates that Kaypro's management is out of control and doesn't want to air out their dirty financial laundry," he said.

According to Katzive, the widely varying financial picture painted by Kaypro between the third and fourth quarters is suspicious. "Finances don't change that radically over one quarter," he said.

A company spokesman said the earnings adjustments were caused by a drop in gross margins from 43.4% in 1983 to 25.7% in 1984, by increase in reserves, by price discounting because of a highly competitive market, by higher than expected advertising and manufacturing costs and by removal of inventory excesses.

Jan Lewis, an analyst at Infocorp, a Cupertino, Calif.-based market research firm, said Kaypro's 1984 losses were not significant over the long term because of the firm's stable position in the retail channel and its constant market share. Kaypro is "still a solid company," Lewis said.

TRADE

sued by the importer's bank, which irrevocably commits itself to pay for the goods if the exporter presents the documents required by the credit.

The exporter's bank examines the documents, determines that they meet the requirements of the credit and so advises the importer's bank, which then forwards payment.

Typically these documents include an invoice, a packing or weight list, a bill of lading and perhaps an insurance form and a customs (or consular) invoice permitting entry of the goods into the importer's country.

Note that neither the exporter's nor the importer's bank actually inspects the goods that are shipped. Only the relevant documents are examined.

It all sounds relatively simple — and should be.

Durango, Molecular Computer plan consolidation

By Kathleen Burton
CW West Coast Bureau

SAN JOSE, Calif. — Merger talks were recently concluded between Molecular Computer, Inc. and Durango Systems, Inc., both based here and both seeking promotion in a market rapidly becoming more competitive.

"Consolidation is the only way companies like us can survive against giants like IBM, Hewlett-Packard Co. and Data General Corp.," said Barry Dearborn, Durango's vice-president of sales. "By ourselves," he said, "we can't play on the same section of the playing field as IBM and AT&T." Dearborn predicted the future will hold more such consolidations in lieu of a shakeout for mid-size, entrepreneurially oriented multiuser vendors.

The two privately held companies began merger talks in November after solidifying a one- to two-year OEM agreement for Durango to supply Molecular with 100 to 150 of its Poppy 80286 computers per month. The Poppy 80286, Durango's flagship product, offers limited compatibility with the IBM Personal Computer AT, and can run MS-DOS, CP/M 86 or Zenix 3.0 operating systems.

The proposed merger would create a company with combined revenues of about $50 million and give Durango access to Molecular's well-established direct sales force, aimed at the Fortune 1,000, Dearborn said.

Molecular's newly appointed President and Chief Executive Officer Frank Zurcher, a former executive vice-president at Televideo Systems, Inc., said that before the merger talks began the firm had been looking to expand into the Xenix area.

Jim Renaldo, an analyst with Dataquest, a market research firm in San Jose,

Calif., said the potential merger will shore up the relatively weak financial positions of Durango and Molecular, which had been relying on a weakened venture capital base. The two companies are reviewing their product strategies now, Renaldo said, and focusing on new target markets. "In this business though," he warned, "there's

not a lot of time to reposition, so if they plan to refocus product lines, they'd better make their move within the next six months."

But some analysts question whether Durango should tamper with its short-term winning strategy at all. According to Robert Lefkowitz, an InfoCorp analyst and former Durango employee, Du-

rango's strength is in the vertically oriented niche occupied by value-added dealers and resellers.

Lefkowitz also said that IBM's recently announced inability to meet first-quarter Personal Computer AT production demands should work in Durango's favor, giving it a substantial lead time in the marketplace.

Second term sees profits

SANTA CLARA, Calif. — National Semiconductor Corp. recently reported a second-quarter profit of $8.5 million, or 10 cents per share, down from the year-earlier profit of $13.2 million, or 16 cents per share.

The company experienced an almost 18% increase in revenues to $436.4 million in the quarter, compared with $7.90 million one year ago, but capital spending of $120 million was almost triple the year-earlier level. The company also increased spending on research and development.

The spending has positioned the company for strong growth when order rates in the industry strengthen, asserted Charles E. Sporck, president and chief executive officer. But he noted that order rates declined in the second quarter and said, "We feel it will be difficult to maintain the company's financial performance in the near term."

COMPUTER INDUSTRY

DEC files suit against C. Itoh

NEWARK, N.J. — Digital Equipment Corp. announced late last month that it has filed suit in U.S. District Court here seeking an injunction to prohibit C. Itoh & Co. America, Inc. from further marketing, selling or distribution of the C. Itoh CIT-220+ video display terminal.

DEC charged that the C. Itoh & Co. product is a direct and unauthorized copy of the "distinct external appearance" of DEC's VT220 terminal and that C. Itoh copied DEC's VT220 documentation and set up screen formats in violation of DEC's copyright protection.

The suit seeks treble damages from C. Itoh, based on the gains and profits the company has received through sales of the CIT-220+ products.

Also named in the suit was the company's parent company, C. Itoh & Co. Ltd. of Japan, along with C. Itoh Electronics, Inc. and CIE Terminals, Inc. C. Itoh Electronics, Inc. and CIE Terminals, Inc. are both located in Irvine, Calif.

Booz Allen exec joins Broadview Associates

FORT LEE, N.J. — Harvey L. Poppel, formerly senior vice-president of Booz, Allen & Hamilton and in charge of its information industry practice, recently announced he has joined Broadview Associates, a firm specializing in mergers and acquisitions in the information services industry.

With the addition of Poppel, according to Broadview founder Gil Mintz, "we will be able to specialize in the hardware and telecommunications sectors of the information industry" in addition to Broadview's traditional focus on computer services and software.

Poppel, 46, was with Booz Allen for 18 years and previously held information management and technology positions with Western Union Telegraph Co. and Westinghouse Electric Corp.

Convergent appoints director

SANTA CLARA, Calif. — Convergent Technologies, Inc. reported recently that William G. Ouchi has been appointed to its board of directors.

The company also announced that David I. Caplan has resigned as president and general manager of the firm's data systems division.

Ouchi is a professor of management and vice-chairman of the Graduate School of Management at the University of California at Los Angeles.

Caplan, who joined Convergent in April, is leaving to take a position as president and chief executive officer at Tolerant Systems Corp.

Intel to sell tools to SAS

AUSTIN, Texas — Intel Corp. said last month that it will sell part of its software operations here to SAS Institute, Inc.

SAS Institute, a Cary, N.C., software company, will acquire the design information, source code, product rights and support responsibilities for Intel's System 2000 data base management system, including the System 2000, Quest, Flex and Report Writer products. Intel's Idis data base information system and the Fast 38xx semiconductor disk products are not included in the agreement.

SAS Institute said the research and development staff for System 2000 will operate as a wholly owned subsidiary and will remain in Austin.

Ztel in leadership change taps execs from investors

WILMINGTON, Mass. — Ztel Corp., a start-up private branch exchange manufacturer, has reported that two of its top executives have been replaced with representatives from two of the firm's four primary investors.

Peter S. Anderson, president and chief executive officer (CEO) of Ztel since April 1983, is said to have resigned from the company on Dec. 14 for personal reasons. Gerald R. Birr, vice-president and chief financial officer, also left the company, a company spokeswoman said.

Ztel's board of directors elected James E. Long as chief operations officer and Harry T. Rein as the company's new chairman of the board. Long, an employee of Adler and Co., a venture capital firm headquartered in New York and one of Ztel's major investors, has reportedly served on Ztel's board since February 1983. Rein will reportedly be working closely with Long until a new CEO can be elected sometime in the near future. Long would neither confirm nor deny whether the so-called "changing of the guard" had anything to do with the company's present financial situation.

AT&T plans megabit chip production by end of year

ALLENTOWN, Pa. — AT&T announced recently it plans to manufacture a megabit memory chip within a year and to be in full production in 1986. The company announced that Bell Laboratories here has produced working chips "that are essentially ready for the production line."

The megabit chip is seen by many as the next big frontier in the production of semiconductors, with varied applications including large storage capacities for 32-bit microprocessors and rapid expansion of portable machine capabilities.

Thomas R. Thomsen, president of

AT&T Technology Systems Group said "AT&T intends to continue a leadership position" in the semiconductor area. In combination with 32-bit chips, Thomsen said, megabit chips in the near future could "help put a supermicrocomputer in business, industrial or other special environments where space is at a premium or for that matter in your lap."

Ian Ross, president of Bell Labs, said his group had successfully simulated the complete production process of the chip "so that there would be no surprises when we put the chip into production."

IBM announced last April that it had produced a megabit chip on an existing production line, indicating it, too, could quickly move into production when a market for the chip develops.

Additionally, at least two Japanese semiconductor companies are believed to have developed prototype megabit chips. AT&T said it will release details on the chip at the International Solid State Circuits Conference in New York this February.

Hitachi said not ready for U.S.

NEW YORK — The marketing director of Hitachi, Ltd. of Japan recently said his company wants "to gain more experience" with its supercomputers before trying to market them in the U.S. or Europe.

When asked for a target date at a recent press conference here, Akio Kimura said, "We are not considering too much about it right now."

The Hitachi S810-10 is being offered at a lease rate of 50 million yen, or about $200,000, a month in Japan. The S810-20, leases for 70 million yen, or about $286,000, a month. Kimura was unable to say what the computer would sell for in Japan. Few companies have considered buying one, he said.

Three of the Hitachi supercomputers are in use in Japan: one at the University of Tokyo and the other two at Hitachi sites.

Kimura said the S-810 models are superior to the Cray Research, Inc. X-MP but was unable to say whether they matched the multiprocessor versions of the Cray machines.

3Com software division to target micro net market

By Eric Bender
CW Staff

MOUNTAIN VIEW, Calif. — 3Com Corp. this month formed an Applications Software Division to develop and market software for networked personal computers and announced revenues of $112.2 million for the quarter ended Nov. 30.

The new division, headed by Robert Metcalfe, 3Com's founder and chairman, will offer both application development tools for system integrators and multiuser productivity packages for end users. With the upgrading of the unit, which was formed last June, to division status, 3Com has marked "the establishment of a critical mass" for applications software and taken the first step in a plan to restructure into divisions, Metcalfe said. He noted that 3Com now has about 260 employees.

According to Metcalfe, the new division will work with outside suppliers in offering software development tools. As one example, he said, "we don't plan to do a data base ourselves, but we will make it work on the net."

On the application software side, "we will be focusing on multiuser productivity tools — not spreadsheets or word processors or data bases, but rather productivity tools for more than one user," Metcalfe said. "The prime example is Ethermail." Planned enhancements for Ethermail include greater

reach to external environments, boosted memory capability and tighter integration with other applications such as calendars and file managers, according to Metcalfe.

3Com's $112.2 million second-quarter revenues represented a 222% increase from $4.1 million in the same quarter last year, the company reported. Net income for the quarter rose to $1.4 million from $664,000 a year ago. Quarterly earnings per share climbed from 6 cents in 1984 to 10 cents this year.

For the first half of the current fiscal year, 3Com's net revenues were $22.1 million, up from $6.3 million in the first half of last year, the company said. Net income for the first half was $2.6 million, up from $910,000. Earnings per share for the first half climbed to 18 cents, up from 8 cents for the same period last year.

Despite rapid growth in this period, 3Com President L. William Krause commented, "Our incoming order rate was lower than expected" and said that IBM's introduction of its PC Network may have caused some customers to review their network purchasing plans.

Head vendor cuts back business

CHATSWORTH, Calif. — Magnetic Information Technology, Inc., a maker of magnetic heads for floppy disk drives, recently announced that it was curtailing its business and that its president, John Dantz, has resigned.

Pete Sidhu, chairman and chief executive officer, said the company plans to continue operation in the U.S. and India on a limited basis. A search has begun for a new president, he said.

Sidhu, noting that 1984 has been a difficult year for the floppy disk business, said the company plans to move into other areas, including Winchester-type magnetic heads.

"And this is our most popular executive model."

NICKELS AND DIMES

Analog Devices, Inc. recently reported that its profits rose 57% to $10.2 million, or 38 cents a share, from $6.5 million, or 25 cents a share, for the fourth quarter ended Nov. 3. Revenues for the latest quarter rose 39% to $64.5 million from $60.5 million during the corresponding year-earlier period.

Panasplic Systems, Inc. reported revenues for its second fiscal quarter of $16.8 million, compared with $11.4 million for the same period a year ago. Profits were $3 million, or 26 cents per share, compared with $1.8 million, or 23 cents per share, in

the comparable quarter last year.

Computer Automation, Inc. announced a net loss of $589,000, or 29 cents per share, on revenues of $14.2 million for the first quarter of 1985, ended Sept. 30. A year earlier, the company reported a first-quarter loss of $2.8 million, or $1.40 per share, and revenues of $12.1 million.

Computer Communications, Inc. announced that revenues for the first quarter ended Sept. 30 declined 19% to $2.3 million from $2.9 million reported in the same period one year earlier. The company reported a net loss in the current quarter of $175,656, or 2 cents per share, compared with $246,296, or 5 cents per share, in the same quarter one year earlier.

Sterling Software, Inc. reported revenues in 1984 rose 103% to $18.7 million, up from $9.2 million last year. Profits for the quarter amounted to $1.1 million, or 25 cents per share, compared with $1.2 million, or 40 cents per share, last year.

Icot Corp. announced revenues for the three months ended Oct. 27 of $5.9 million, compared with $3.5 million in the corresponding period last year. Profits were $67,000, or 1 cent per share, compared with a loss of $996,000, or 11 cents per share, for the comparable period one year earlier.

The MacNeal-Schwendler Corp. reported revenues for the nine months ended Oct. 31 of $10.2 million, compared with $8.2 million for the same period last year. Profits

were $2.2 million, or 35 cents per share, compared with $1.8 million, or 32 cents per share, for the comparable quarter one year earlier.

Bishop Graphics, Inc. announced revenues for the fourth quarter of fiscal 1984 were $3.2 million, compared with $3.2 million in the same period one year ago. Profits were $243,000, or 12 cents per share, compared with $288,000 or 14 cents per share, in the year-earlier quarter.

Floating Point Systems, Inc. reported revenues for the fourth quarter of $33.4 million, compared with $29 million in the same quarter last year. Profits were $4.4 million, or 55 cents per share, compared with $4.4 million, or 50 cents per share, in the corresponding period a year earlier.

RECOVER from page 149

Bauer said he plans to avoid this diffusion of corporate energies in the future. With this in mind, he recently consolidated the company into eight divisions, all housed under the newly formed Systems and Applications groups. Both groups have distinct purposes, he said.

The Applications Group, which accounts for half of Informatics' revenues through its sale of software in corporate vertical markets such as legal, accounting, insurance and distribution, Bauer now shares a common sales and marketing team and is aiming to beef up its dealer base to 160 value-added resellers. The newly consolidated Systems Group, Bauer explained, will allow the company to position itself as a prime contractor for its federal clients — a sector of the firm's business that already is worth $35 million a year — and serve as a one-stop shopping center for corporate programming needs.

Informatics plans more acquisitions in the services area, noted Richard Lemons, Informatics' executive vice-president of information. Lemons said that aggressive international expansion is projected for 1985, based on a recently established European major accounts program and an Informatics division in France.

Brian Boyle, an analyst with Gnostic Concepts, Inc., a market research firm in Palo Alto, Calif., said that Informatics' financial problems in 1984 were caused by the company's having "too many eggs in their Mark V basket," a product he called "obsolete before its time." To move out of its financial slump, he said, the company has to move ahead in 1985 with new products. Informatics' value-added orientation and high overhead costs make such a move difficult in the micro area, he added.

According to Peter Lowber, a senior market analyst at the Yankee Group in Boston, Informatics lacks the basic foundation software to grow into future vertical markets and address future DP concerns. The key products he sees missing from Informatics' arsenal are fourth-generation language system capabilities, MIS' future alternative to Cobol, and a full relational data base management product, the model for data bases of the future.

COMPUTER INDUSTRY

Systems Associates, Inc. reported revenues for the third quarter ended October 31 of $8.1 million, up 29% from $6.5 million one year ago. Profits were $747,000, or 30 cents per share, compared with $716,000, or 31 cents per-share, in the corresponding quarter a year earlier.

Gerber Scientific, Inc. announced second-quarter profits of $6.4 million, or 37 cents per share, compared with $3.4 million, or 34 cents per share in the same period one year earlier. Revenues were $52.6 million, compared with $42.7 million in the corresponding quarter one year ago.

Tektronix, Inc. announced profits for the second quarter ended Nov. 10 of $22 million, or $1.14 per share, compared with $11.6 million, or 66 cents per share, in the year-earlier quarter. Revenues were $553.4 million, up 17% from $286 million in the comparable quarter one year ago.

Dataline, Inc. announced a third-quarter loss of $3.9 million, or 38 cents per share, compared with a loss of $2.7 million, or 27 cents per share earlier. Revenues for the quarter were $411,000, compared with $191,000 in the corresponding quarter one year ago.

Applied Magnetics Corp., a net loss for the fourth quarter of $1.9 million, or 30 cents per share, compared with a profit of $3.6 million, or 59 cents per share for the same quarter last year. Revenues were $35.1 million, compared with $31.6 million in the same quarter one year earlier.

Cognos reported consolidated revenue for its wholly owned subsidiaries in the U.K. and the U.S. reached $26.3 million (Canadian) in 1984, a 47% increase from $17.9 million during the previous year. Profits increased 125% to $1.9 million compared with $892,615 in the corresponding period one year earlier.

group's total portfolio, as added. Specifically, ITT Commercial Finance has about $200 million worth of computer financing instruments due at any one moment and for the first 11 months of 1984 generated a volume of $860 million.

Brown claimed his company is, as of 1980, the first to jump into providing financial services to retail computer dealers. He said it began by offering floor-plan financing — financing of retail dealers' shop floor inventory — for dealers of Apple Computer, Inc. equipment.

Currently, according to John Dobson, the ITT group's senior vice-president, the group provides 75% of the national retail financing market, dealing with almost 3,000 retailers.

In a move to expand beyond its original floor plan financing and related business services, Commercial Finance, as part of the consolidation, created two new divisions.

One, the Equipment Lease

and Finance Division, will provide installment loans and leases for new and used computer systems and other capital equipment. The second, the Automated Finance and Lease Division, will provide dealers, distributors and manufacturers with a computer-linked credit check and finance authorization service that reportedly can approve financing within three to four hours.

'Requires steady nerves'

Brown noted that rapid inventory turnover, product volatility in the retail computer market and increasing competition among dealers "requires steady nerves" in signing up dealers. He said his company has developed a profile and product turnover ratios that are used to evaluate credit risks.

The company has also developed a specialized staff that is able to differentiate among various products and manufacturers and will only back retail operations selling leading products, he added.

ITT Commercial Finance is intent on capturing an early lead in the leasing of low-end equipment, an area regarded with suspicion by traditional lessors because of the rapid product cycles and price cuts that have accompanied the expansion of the micro market.

Dobson acknowledged that leasing of low-end equipment has not caught on yet. However, he claimed, as competition at the retail level intensifies, dealers looking for an edge "will have to turn to end-user financing."

COMPUTER INDUSTRY

⚡ **SUPERSHORTS**

Triumph-Adler AG confirmed Pertec Computer Corp. of Irvine, Calif., will remain part of Triumph-Adler North America, Inc., Hartford, Conn., ending plans to sell Pertec.

■

Information Solutions, Inc. (ISI) reported that Prime Computer, Inc. and ISI have agreed in principle to enter into a joint venture to market turnkey computer hardware and software systems to the lodging industry.

Under the terms of the tentative agreement, Prime will assume the primary and exclusive responsibility for marketing ISI's hospitality sys-

tems to property management companies, hotels and motels as well as resorts.

■

Relational Technology, Inc. has signed two separate joint development and marketing agreements, making Ingres available on Amdahl Corp.'s UTS operating system and on Pyramid Technology Corp.'s computer systems.

■

Tandberg Data, Inc. announced plans to consolidate its Armonk, N.Y.-based terminal division and its data storage division into one central location at the data storage division's new manufacturing facility in Anaheim, Calif.

■

Tandem Computers, Inc. and **On-Line Software International, Inc.** announced they have settled their lit-

igation involving the Guardian trademark used for computer software products.

In accordance with the settlement, the New Jersey lawsuit will be dismissed as well as a related administrative proceeding in the United States Patent and Trademark Office.

Under the terms of the agreement, On-Line Software has agreed to abandon its federal trademark application and not to oppose Tandem's application for registration of the trademark Guardian.

■

Honeywell, Inc. has formed a marketing support group to improve the availability of application software for DPS 8 and DPS 88 large-scale computers operating under Gcos. The applications marketing group will focus on scientific and commercial cross-industry packages, with initial

emphasis on financial, distribution and engineering support applications.

■

The Association of Data Processing Service Organizations has reached an agreement with **National Information Systems** to provide joint purchasing of computer peripherals with Data Securities International to provide a new protection service to safeguard software.

■

Control Data Corp. announced that it will donate up to 10 Cyber 180/810 superminicomputer systems totaling $5 million to universities which are selected for National Science Foundation's (NSF) Engineering Research Center program. NSF applicants had the option of requesting the Cyber 180 systems in their proposals.

TANDEM from page 149

He declined to discuss specific new products that the company may introduce during the coming year. He said Tandem has not canceled any development projects recently but has "redirected" some of them.

He said the company plans this year to introduce some low-end products aimed at an office-type environment. The company's systems have been used widely for on-line transaction processing in areas such as banks, airlines and telephone companies. Conceding that the company "didn't concentrate" on its relationships with software houses in the past, Treybig said Tandem has worked to correct that deficiency.

"We made the mistake of not realizing that we had become a big company and that we had a lot of benefit for software houses," he said. The company has established a business alliance program in which it encourages and provides support for software developers.

Software is vital to Tandem's fault-tolerant computers, which rely on parallel processors and sophisticated software to allow the computers to work together, as well as work around a unit that may have failed.

As the company has grown from no revenue in 1976 to more than $500 million for the last fiscal year, Treybig said he has tried to maintain the progressive, people-oriented corporate culture for which the Cupertino, Calif., company is well known.

"There are things we've done well and haven't done well," he said. "I think we went through lots of transitions, but I don't think it affected our goals from a people or management point of view."

On the subject of start-up companies that have tried to challenge Tandem in the fault-tolerant market, Treybig noted that most have failed for a variety of reasons. He believes the availability of venture capital funds for some of the start-ups created a crowded market in which only a few firms could survive.

When Tandem started, he noted, there were no other companies in the fault-tolerant market.

"The start-ups have so much money, and they're all competing against one another, that it's difficult to make a profit. So a situation that appears to be much better, because there's a lot of money, is really a disadvantage, because you're going to have lots of other competitors just like you," he said.

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EDUCATION

Researching
your options
will show you that
your best source is
COMPUTERWORLD

The Bulletin Board

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The Bulletin Board

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Microgate emulators available for IBM micro

AUSTIN, Texas — Gateway Microsystems, Inc. has introduced a series of Microgate terminal emulation products for the IBM Personal Computer AT.

The Microgate/WS is said to be an integrated workstation emulating IBM 2780, 3780 and 3270 series terminals. It reportedly provides both batch and interactive micro-to-mainframe communications. Microgate 2780/3780 is an IBM 2780/3780 data communications terminal emulator that uses Binary Synchronous Protocol, according to Gateway.

The Microgate II reportedly is a bisynchronous communications subsystem with a programmable interface to Micro-Focus Cobol and IBM's PC Cobol, compiled Basic and Pascal and assembly languages.

The Microgate 6530 is said to be an enhanced emulator of the Tandem Computers, Inc. Model 6530/20 terminal. The Microgate 940 emulates the Texas Instruments, Inc. Model 940/931 terminal, allowing personal computers to be used on TI's DS990 and Business System series minicomputers, the vendor said.

The Microgate 940 is priced from $250 to $495; Microgate 6530 from $495 to $1,095; Microgate II, $980; Microgate 2780/3780, $895; and Microgate/WS, $995.

Gateway Microsystems is located at Suite 105, 9901 Capital of Texas Highway N., Austin, Texas 78759.

Research software announced

EUGENE, Ore. — Economic Software, Inc. has introduced Research, software that integrates data base management with color graphics and statistical analysis capabilities.

The package reportedly permits users to plot on one screen several different data types, such as correlations between daily interest rates, weekly money supply and monthly inflation rates, Economic Software said.

Research also generates a calendar of days automatically and allows data transfer from various programs, including Lotus Development Corp.'s 1-2-3, the company said.

The software runs on the IBM Personal Computer, Personal Computer XT and Personal Computer AT with 256K bytes of random-access memory.

The program is provided with 328 weeks of data on 60 major economic measures and is priced at $695. A demonstration diskette is priced at $17.95.

Economic Software can be reached at P.O. Box 10025, Eugene, Ore. 97440.

S-100 units gain MS-DOS version

NEW YORK — Lifeboat Associates has introduced SB-86, a version of Microsoft Corp.'s MS-DOS 2.11 operating system for computers based on the S-100 bus architecture. SB-86 reportedly is compatible with IBM's PC-DOS and runs on two CPU boards, the CPU 8085/88 and the CPU 86/87, made by Compupro, Inc. located in Hayward, Calif.

Lifeboat said that its entire line of MS-DOS software — including compilers, assemblers, linkers and business applications such as WP and spreadsheet packages — is available immediately for the new operating system.

The SB-86 requires the CPU card, a Compupro System Support 1 card, a Disk 1 or 1A controller and disk drive and at least 64K bytes of 24-bit addressable random-access memory, the vendor said. The system is said to support both interrupt-driven and noninterrupt-driven conmu e I/O.

The SB-86 is priced at $276. Lifeboat Associates is located at 1651 Third Ave., New York, N.Y. 10128.

SOFTWARE

POLYGON SOFTWARE CORP.
Easypath 1.0

Polygon Software Corp. has announced a facility that allows users of IBM Personal Computers and compatibles to locate files in subdirectories other than the ones they are working with.

Easypath 1.0 reportedly allows use of the hierarchical subdirectory structure in IBM PC-DOS and Microsoft, Inc. MS-DOS without copying files back and forth. Search paths reportedly can be specified separately for particular files or for groups of files.

The product is said to come with predefined specifications for most major programs and to require PC-DOS or MS-DOS 2.0 or higher.

The list price is $100.

Polygon Software, 363 Seventh Ave., New York, N.Y. 10001.

PRO/TEM SOFTWARE
Notebook II

Pro/Tem Software had introduced the Notebook II data base management system for the IBM Personal Computer line and for the Hewlett-Packard Co. HP 150 and HP 110.

Notebook II reportedly includes a text editor with word wrap, automatic reformatting and screen update. It is said to be able to read files from word processors and public data bases and to accept control and extended characters.

Each Notebook II record is said to be able to include up to 28,000 characters and up to 50 fields.

Field and records sizes are not predefined, the vendor said.

Notebook II is priced at $189, according to a vendor spokesman.

Pro/Tem Software, 2363 Boulevard Circle, Walnut Creek, Calif. 94595.

DURANGO SYSTEMS, INC.
Poppy OS

Durango Systems, Inc. has released Poppy OS, which allows Microsoft Corp.'s MS-DOS programs to run under Microsoft's Xenix operating system.

Poppy OS allows the MS-DOS system calls to speak to the Xenix interpreter, thus enabling MS-DOS-based software to function on the Durango Poppy 286/186 Xenix-based systems. Poppy 286/186 supports up to 12 users with a multitasking operating system.

Poppy OS allows users to run single-user MS-DOS applications programs — such as Micropro International Corp.'s Wordstar, Microsoft's Multi-Plan and Ashton-Tate's Dbase II on a multiuser system.

Poppy OS costs $300.

Durango Systems, 3003 N. First St., San Jose, Calif. 95134.

MCDONNELL DOUGLAS SOFTWARE
Tym/Vsam

McDonnell Douglas Software has introduced Tym/Vsam for the IBM Personal Computer AT/370.

Tym/Vsam reportedly offers users most functions of IBM's Vsam mainframe software, including data storage and retrieval capabilities. It is said to allow the AT/370 to be used as a workstation for the development and testing of programs.

Tym/Vsam also is said to free users from having to return files to the mainframe for testing and to support random or sequential storage and data retrieval.

Tym/Vsam costs $695.

McDonnell Douglas Software, 20705 Valley Green Drive, Cupertino, Calif. 95014.

NEC INFORMATION SYSTEMS, INC.
DR Draw, DR Graph versions

NEC Information Systems, Inc. has announced versions of Digital Research, Inc.'s DR Draw and DR Graph for NEC's Advanced Personal Computer (APC).

The APC's graphics capabilities reportedly allow users to take full advantage of the two products.

DR Graph can be used to create graphs and charts from information in data files, the vendor said. It reportedly also can create line, bar, pie, step, stick and scatter graphs.

DR Draw can be used for creating presentation-quality charts and diagrams, NEC said.

DR Graph is priced at $295. DR Draw is priced at $395, the vendor said.

NEC Information Systems, 1414 Massachusetts Ave., Boxborough, Mass. 01719.

MICROCOMPUTERS

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hard disks. Backing up even a small, 10M-byte hard disk can require more than two dozen floppies. The inconvenience deters most users.

Cartridge tape drives that provide adequate backup for micros have been available for several years. They cost about the same as a hard disk drive, and some users consider the price to be high.

Users who keep vital data on hard disks should consider the value or replacement cost of the protected data. When users investigate backup capabilities, they should look for:

■ Data capacity. The backup medium should hold all data on one or — at most — a few volumes.

■ Data transfer speed. A backup should not be time-consuming.

■ Cost. Cost considerations include the cost of both the media and the device.

■ Available software support. A backup device should provide the capabilities a user needs.

The standard for micro backup devices is the cartridge tape drive. The physical design provides storage capability in a package the size of a paperback novel. Cartridge tapes range in capacity from 10M to 50M bytes and cost $35 to $45 each.

During the past year, several removable cartridge units that use hard or floppy disks have been introduced. The products now available have limited storage capacities and cost two to four times more than higher capacity tape cartridges.

Users interested in cartridge tape backup have several choices. Cartridge tape drives operate in two modes, start-stop and streaming.

Start-stop drives, the older of the two technologies, physically start and stop the tape for each recording. This allows the controlling software to write a series of individual files to the tape. The penalty is a slow transfer rate.

With streaming tape drives, the tape moves continuously, streaming across the tape head. This allows faster data transfer and greater storage capacity.

The newest generation of streaming cartridge tape systems have software to provide complete file-oriented operations while essentially keeping the tape streaming.

The final step toward security lies with the user. Users must develop a set of procedures to ensure that data is backed up, that copies are kept both in the office and off-site and that proper cataloging lets users know where the data is when they need it.

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light, apparently forever.

A year ago Apple was still announcing products for the Apple III. More importantly, it was busily leaking details of the Macintosh, creating tremendous interest and considerable debate about whether the machine would be suitable for the corporate environment.

Also last January, the industry was watching AT&T slowly wheel its guns around toward the computer market. In 1985, we are still waiting for signs of a successful attack by the giant firm, with most interest in the voice/data workstations now poised for entry.

Twelve months ago, there were many more micro companies but no cheap desktop laser printers, no next-generation integrated packages such as Lotus Development Corp.'s Symphony, almost no IBM-developed micro software and less "mindware." Sometimes it seems a long time ago.

COMPUTER INDUSTRY

Tandem moves to reposition itself

Aims to hold down costs, put low-end system on market

By David Olmos
CW Staff Writer

PALM SPRINGS, Calif. — After broadening its product line and enacting cost-cutting measures and tighter management controls last year, Tandem Computers, Inc. is aiming to recapture the momentum it seemed to be losing.

"We grew our people faster than our revenue last year," James Treybig, Tandem's president and chief executive officer, admitted in a recent interview here. "The fundamental thing we're doing is not hiring people until our revenues catch up."

At the same time, Treybig said, the company, which manufactures fault-tolerant, on-line transaction processing systems, has "moved to reposition ourselves and offer low-end systems as well [as high-end ones], which was something we should always have done." He said the company's strategy now is to offer a broader range of products while striving to maintain its position in larger systems.

Financial performance improving

Tandem's financial performance has been unsteady during the past couple of years. With revenue growth slowing and operating margins down, the company began about a year ago to increase its focus on costs and profitability. The number of employees has been reduced, although the company has increased its sales force.

Industry analysts who follow Tandem said the near-term prospects for the company are good.

"They seem to be determined to get back into the mainstream of major growth and get close to their historical margins," said Fred Cohen, an analyst with L.F. Rothschild, Unterberg, Towbin, a New York brokerage firm. Cohen said the company could have been faster in improving its hardware and reducing its costs.

Treybig said Tandem had a strong fourth quarter for the period ended Sept. 30, reporting a 50% increase in revenue and a 35% gain in profit over the year-earlier period. "If we have good growth this quarter, then we'll be back to approaching our historical margins," he said.

Informatics to counter losses with organizational changes

By Kathleen Burton
CW West Coast Bureau

WOODLAND HILLS, Calif. — There is a newly intensified corporate tone in evidence these days at Informatics General Corp., an information processing services and software company attempting to recover from severe financial losses sustained in 1984.

To do so, and to meet its goal of becoming a $1 billion company by 1990, Informatics is reshuffling management, revamping its corporate strategy and repositioning several newly announced products to target the microcomputer market. Lemons kat, according to executives interviewed here recently.

Other organizational changes include selling ailing divisions and repositioning languishing product lines, such as insurance, to target the micro market. "We're getting back to basics," said Walter F. Bauer, the firm's cofounder, chairman and chief executive officer.

Informatics posted depressed financial figures for 1984. Profits fell, and net income plummeted 87% to $546,000, compared with $4.2 million for the same period in 1983. The reasons, according to company insiders, were losses of $4 million in the company's $30 million life insurance operation, $2 million in the $34 million applications software products group and flattened sales of its flagship Mark V applications development product. Industry analysts indicated that Informatics' poor financial showing last year was due to a chronic lack of focus. In the past, Informatics has offered a potpourri of services, ranging from customized programming to project management and systems, to a widely diversified array of customers including Fortune 1,000 corporations, the federal government and small businesses.

ITT consolidates credit divisions to offer expanded finance service

By Peter Bartolik
CW Staff

ST. LOUIS — Through ongoing consolidation of various credit divisions, ITT Corp.'s ITT Commercial Finance Group hopes to build its early lead in retail computer financing into a position as the dominant one-stop financing service, including lease underwriting, for business computer equipment sold at the retail level.

The credit group, an operating unit of the $5 billion ITT Financial Corp.,

over recent months has absorbed four divisions of the former ITT Industrial Credit Co. under the direction of Melvin P. Brown, the Commercial Finance group's president and chief executive officer.

In a recent interview, Brown said the objective of the consolidated operation is to provide full-service commercial financing to leading computer retail operations. Those services currently provide about one-sixth of the

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■ **Kaypro Corp.**'s annual financial report showed that a $10 million profit, built up over the first three quarters, had been wiped out./**151**

■ **Digital Equipment Corp.** has filed suit against C. Itoh & Co. America, Inc., asking a federal court to halt sales of C. Itoh's display terminal, which DEC alleges copies some of its VT220 terminal traits./**183**

■ **3Com Corp.** has set up an applications software division under the direction of company founder and chairman Bob Metcalf./**186**

Absence of tax reform may disappoint industry in '85

INDUSTRY INSIGHT
Peter Bartolik
CW Senior Editor

The most significant business-pertinent policy issues raised recently in Washington, D.C., are, first, the federal budget and, second, tax reform.

The Reagan administration cannot seem to get its act together on a comprehensive budget reduction package and therefore is going to have a big problem trying to sell a tax simplification package.

The waffling and wavering that has dampened Cabinet-level budget meetings leaves the impression that the executive branch is running around headless. The inability to develop a comprehensive budget package with a military budget cut significant enough to make it salable

in Congress can only detract from the momentum and leadership that should be present in the White House during the beginning of a second presidential term.

Trade groups call for freeze

Recently, the American Electronics Association joined with other major national trade associations to call for a budget freeze, including a freeze in defense spending.

While many people see a budget cutback and tax reform ideally going hand in hand, the folly being played out in the budget process will undoubtedly carry over to the tax-writing process. Where the lack of leadership results in special dispensations in the budget, so surely will special interests smell an opening and flock to influence a new tax act. The end result will prove that likely turn into another example of loophole-ridden amendments, leaving the tax code in even worse shape than at present.

Unless the government gets its house in order, 1985 could turn out to be a very disappointing year for American industries.

A fatality earlier this summer stemming from chemicals located at the M/A-Com, Inc. gallium arsenide semiconductor laboratory was in no way job-related, according to a verbal report the company said it has received from the U.S. Department of Labor's Occupational Safety and Health Administration (Osha).

Joseph C. Bothwell, senior vice-president of the Burlington, Mass., company, said he was told by Osha that the death of employee John Zemotel from the inhalation of arsine gas in June was not job-related. However, as a result of an intensive investigation following the fatality, Osha issued two citations al-

leging inadequate records of baseline airborne monitoring for inorganic arsenide and for concerns over certain written procedures, eyewash facilities, housekeeping and training programs. "Neither of these citations is related to Mr. Zemotal's tragic death," Bothwell said.

Entered lab without authorization

Zemotel reportedly entered the laboratories June 11 without authorization and inhaled arsine gas that was stored in a cylinder. He went into a coma later in the day and died on June 22.

M/A-Com had initially termed the death a possible suicide but later retracted its statement following complaints from Zemotel's relatives.

The Osha report, which has not yet been received in final written form, followed an earlier, similar report from the Massachusetts Department of Occupational Medicine.

Intercompany discrepancies yield costly export errors

OUTSIDE LINES
Arthur Bardakjian
and Joseph Colleran

First of a two-part article

Manufacturers of computer hardware and software expend as much effort making and marketing their products that they are not always aware that their work is sometimes unwittingly sabotaged by other units of their companies, thus costing the companies money. This occurs most often, perhaps, when the manufacturers export their products.

How do we know all this? In the firm seven months of 1984, Irving Trust Co. made nearly 21,000 payments to a variety of American exporters under letters of credit issued by overseas buyers of their products. In order to obtain payment under these credits, the exporters had to present the bank with various documents showing, among other things, that they had shipped the goods they said they would.

Records of the presentations made by these exporters indicated that 34.2% contained discrepancies of one kind or another. In other words, in more than one case in three the exporters erred in preparing the documents or else did not provide all those that were required. This experience is neither unique nor unusual in the banking industry.

What was the result of these errors? In a few cases the exporters lost their sales altogether. Because of discrepancies in the documents, the overseas buyers canceled their orders.

Usually, however, the discrepancies were corrected, and the sales were consummated. Even so, the exporters were not paid until the discrepancies were rectified and thus lost the use of their money for a day, a week, even two weeks or more. And often they were charged a fee. Over the last few years, banks have routinely levied such fees when presented with documents that contained discrepancies that could not be corrected and on which waivers had to be sought from the goods' importers.

On Oct. 1, the International Chamber of Commerce effected changes in the Uniform Customs and Practice for Documentary Credits, the rules governing the use of

letters of credit in international trade. Some casual observers may think that these changes will reduce the discrepancies banks find so often in this area. We think no such thing.

In general, the changes merely streamline the use of letters of credit in international trade and recognize current practices fostered by the use of new technologies. For example, they sanction the use of photocopies, in lieu of original documents, as well as facsimile transmissions and other means of electronic communications.

The fact is a reduction in errors can only be achieved by exporters themselves. Before studying their most common mistakes, let's look

briefly at letters of credit and how they are used.

In international trade, an exporter may wish to be paid as soon as he ships his goods, while the importer may not wish to make payment until he has received them. A letter of credit serves to reconcile the interests of both parties.

It is a binding agreement that specifies what the exporter is to ship, what is to be paid for the shipment, when it is to be paid and any other conditions on which the buyer and seller agree. In addition, the letter of credit guarantees that money is available to pay for the shipment.

The letter of credit is is-

"I RELY ON AST FOR

Bardakjian is a vice-president in the Trade Finance division and Colleran is a vice-president in the Credit Services division of Irving Trust Co. in New York.

Earnings adjustments mark Kaypro's fiscal statement

Refusal to reveal fourth-quarter figures could mean problems, analysts say

By Kathleen Burton
CW West Coast Bureau

SOLANA BEACH, Calif. — Portable computer manufacturer Kaypro Corp. recently released its annual financial statement without revealing fourth-quarter results that wiped out a $10 million profit it built over the first nine

months of the fiscal year.

Kaypro reported a $367,683 loss for the fiscal year ended Aug. 31 after a series of unspecified year-end earnings adjustments. Kaypro officials would not reveal fourth-quarter financial figures or disclose earnings adjustments made to figures in

the earlier periods.

Kaypro reported earlier that it expected to break even for the year. For the first three quarters, Kaypro reported net income of $10 million, compared with a 1983 net income of $5.5 million.

A company spokesman

said Kaypro is now investigating an unexpected end-of-the-year inventory adjustment. Earlier in the year, David Kay, Kaypro's director of marketing, claimed that several million dollars of inventory parts were missing, possibly because of a theft from a circus tent on Kay-

pro's grounds, where the parts had been stored.

Management problem?

Bob Katsive, vice-president of Gnostic Concepts, Inc., a market research firm in Palo Alto, Calif., said Kaypro's secretiveness about the details of the write-down, its late Securities and Exchange Commission filing and restatement of profit margins suggest a fundamental management problem.

"It indicates that Kaypro's management is out of control and doesn't want to air out their dirty financial laundry," he said.

According to Katsive, the widely varying financial picture painted by Kaypro between the third and fourth quarters is suspicious. "Finances don't change that radically over one quarter," he said.

A company spokesman said the earnings adjustments were caused by a drop in gross margins from 43.4% in 1983 to 25.7% in 1984, by increases in revenues, by price discounting because of a highly competitive market, by higher than expected advertising and manufacturing costs and by reserves of inventory excesses.

Jan Lewis, an analyst at Infocorp, a Cupertino, Calif.-based market research firm, said Kaypro's 1984 losses were not significant over the long term because of the firm's stable position in the retail channel and its constant market share. Kaypro is "still a solid company," Lewis said.

sued by the importer's bank, which irrevocably commits itself to pay for the goods if the exporter presents the documents required by the credit.

The exporter's bank examines the documents, determines that they meet the requirements of the credit and so advises the importer's bank, which then forwards payment.

Typically these documents include an invoice, a packing or weight list, a bill of lading and perhaps an insurance form and a customs (or consular) invoice permitting entry of the goods into the importer's country.

Note that neither the exporter's nor the importer's bank actually inspects the goods that are shipped. Only the relevant documents are examined.

It all sounds relatively simple — and should be.

Durango, Molecular Computer plan consolidation

By Kathleen Burton
CW West Coast Bureau

SAN JOSE, Calif. — Merger talks were recently concluded between Molecular Computer, Inc. and Durango Systems, Inc., both based here and both seeing proportion in a market rapidly becoming more competitive.

"Consolidation is the only way companies like us can survive against giants like IBM, Hewlett-Packard Co. and Data General Corp.," said Barry Dearborn, Durango's vice-president of sales. "By ourselves," he said, "we can't play on the same section of the playing field as IBM and AT&T." Dearborn predicted the future will hold more such consolidations in lieu of a shakeout for mid-size, entrepreneurially oriented multiuser vendors.

The two privately held companies began merger talks in November after solidifying a one- to two-year OEM agreement for Durango to supply Molecular with 100 to 150 of its Poppy 80286 computers per month. The Poppy 80286, Durango's flagship product, offers limited compatibility with the IBM Personal Computer AT, and can run MS-DOS, CP/M 86 or Zenix 3.0 operating systems.

The proposed merger would create a company with combined revenues of about $50 million and give Durango access to Molecular's well-established direct sales force, aimed at the Fortune 1,000, Dearborn said.

Molecular's newly appointed President and Chief Executive Officer Frank Zurcher, a former executive vice-president at Televideo Systems, Inc., said that before the merger talks began the firm had been looking to expand into the Zenix area.

Jim Renalds, an analyst with Dataquest, a market research firm in San Jose,

Calif., said the potential merger will shore up the relatively weak financial positions of Durango and Molecular, which had been relying on a weakened venture capital base. The two companies are reviewing their product strategies now, Renalds said, and focusing on new target markets. "In this business though," he warned, "there's

not a lot of time to reposition, so if they plan to refocus product lines, they'd better make their move within the next six months."

But some analysts question whether Durango should tamper with its short-term winning strategy at all. According to Robert Lefkowitz, an Infocorp analyst and former Durango employee, Durango's strength is in the vertically oriented niche occupied by value-added dealers and resellers.

Lefkowitz also said that IBM's recently announced inability to meet first-quarter Personal Computer AT production demands should work in Durango's favor, giving it a substantial lead time in the marketplace.

Second term sees profits

SANTA CLARA, Calif. — National Semiconductor Corp. recently reported a second-quarter profit of $8.5 million, or 10 cents per share, down from the year-earlier profit of $12.2 million, or 15 cents per share.

The company experienced an almost 18% increase in revenues to $435.4 million in the quarter, compared with $369 million one year ago, but capital spending of $120 million was almost triple the year-earlier level. The company also increased spending on research and development.

The spending has positioned the company for strong growth when order rates in the industry strengthen, asserted Charles E. Sporck, president and chief executive officer. But he noted that order rates declined in the second quarter and said, "We feel it will be difficult to maintain the company's financial performance in the near term."

DEC files suit against C. Itoh

NEWARK, N.J. — Digital Equipment Corp. announced late last month that it has filed suit in U.S. District Court seeking to prohibit C. Itoh & Co. America, Inc. from further marketing, selling or distribution of the C. Itoh CIT-220+ video display terminal.

DEC charged that the C. Itoh & Co. product is a direct and unauthorized copy of the "distinct external appearance" of DEC's VT220 terminal and that C. Itoh used DEC's VT220 documentation and set up screen formats in violation of DEC's copyright protection.

The suit seeks treble damages from C. Itoh, based on the gains and profits the company has received through sales of the CIT-220+ products.

Also named in the suit was the company's parent company, C. Itoh & Co. Ltd. of Japan, along with C. Itoh Electronics, Inc. and CIE Terminals, Inc. C. Itoh Electronics, Inc. and CIE Terminals, Inc. are both located in Irvine, Calif.

Booz Allen exec joins Broadview Associates

FORT LEE, N.J. — Harvey L. Poppel, formerly senior vice-president of Booz, Allen & Hamilton and in charge of its information industry practice, recently announced he has joined Broadview Associates, a firm specializing in mergers and acquisitions in the information services industry.

With the addition of Poppel, according to Broadview founder Gil Mintz, "we will be able to specialize in the hardware and telecommunications sectors of the information industry" in addition to Broadview's traditional focus on computer services and software.

Poppel, 46, who with Booz Allen for 18 years and previously held information management and technology positions with Western Union Telegraph Co. and Westinghouse Electric Corp.

Bull

Convergent appoints director

SANTA CLARA, Calif. — Convergent Technologies, Inc. reported recently that William G. Ouchi has been appointed to its board of directors.

The company also announced that David I. Capian has resigned as president and general manager of the firm's data systems division.

Ouchi is a professor of management and vice-chairman of the Graduate School of Management at the University of California at Los Angeles.

Capian, who joined Convergent in April, is leaving to take a position as president and chief executive officer at Tolerant Systems Corp.

Intel to sell tools to SAS

AUSTIN, Texas — Intel Corp. said last month that it will sell part of its software operations here to SAS Institute, Inc.

SAS Institute, a Cary, N.C., software company, will acquire the design information, source code, product rights and support responsibilities for Intel's System 2000 data base management system, including the System 2000, Quest, Plex and Report Writer products. Intel's life data base information system and the Fast 3&xx semiconductor data products are not included in the agreement.

SAS Institute said the research and development staff for System 2000 will operate as a wholly owned subsidiary and will remain in Austin.

Ztel in leadership change taps execs from investors

WILMINGTON, Mass. — Ztel Corp., a start-up private branch exchange manufacturer, has reported that two of its top executives have been replaced with representatives from two of the firm's four primary investors.

Peter S. Anderson, president and chief executive officer (CEO) of Ztel since April 1983, is said to have resigned from the company on Dec. 14 for personal reasons. Gerald R. Birt, vice-president and chief financial officer, also left the company, a company spokeswoman said.

Ztel's board of directors elected James E. Long as chief operations officer and Harry T. Rein as the company's new chairman of the board. Long, an employee of Adler and Co., a venture capital firm headquartered in New York and one of Ztel's major investors, has reportedly served on Ztel's board since February 1983. Rein will reportedly be working closely with Long until a new CEO can be elected sometime in the near future. Long would neither confirm nor deny whether the so-called "changing of the guard" had anything to do with the company's present financial situation.

AT&T plans megabit chip production by end of year

ALLENTOWN, Pa. — AT&T announced recently it plans to manufacture a megabit memory chip within a year and to be in full production in 1986. The company announced that Bell Laboratories here has produced working chips "that are essentially ready for the production line."

The megabit chip is seen by many as the next big frontier in the production of semiconductors, with varied applications including large storage capacities for 32-bit microprocessors and rapid expansion of portable machine capabilities.

Thomas R. Thomsen, president of

AT&T Technology Systems Group said "AT&T intends to continue a leadership position" in the semiconductor area. In combination with 32-bit chips, Thomsen said, megabit chips in the near future could "help put a supermicomputer in business, industrial or other special environments where space is at a premium or for that matter in your lap."

Ian Ross, president of Bell Labs, said his group had successfully simulated the complete production process of the chip "so that there would be no surprises when we put the chip into production."

IBM announced last April that it had produced a megabit chip on an existing production line, indicating it, too, could quickly move into production when a market for the drive develops.

Additionally, at least two Japanese semiconductor companies are believed to have developed prototype megabit chips. AT&T said it will release details on the chip at the International Solid State Circuits Conference in New York this February.

Hitachi said not ready for U.S.

NEW YORK — The marketing director of Hitachi, Ltd. of Japan recently said his company wants "to gain more experience" with its supercomputers before trying to market them in the U. S. or Europe.

When asked for a target date at a recent press conference here, Atsu Kimura said, "We are not considering too much about it right now."

The Hitachi S810-10 is being offered at a lease rate of 50 million yen, or about $200,000, a month in Japan. The S810-20, leases for 70 million yen, or about $286,000, a month. Kimura was unable to say what the computer would sell for in Japan. Few companies have considered buying one, he said.

Three of the Hitachi supercomputers are in use in Japan: one at the University of Tokyo and the other two at Hitachi sites.

Kimura said the S-810 models are superior to the Cray Research, Inc. X-MP but was unable to say whether they matched the multiprocessor versions of the Cray machines.

3Com software division to target micro net market

By Eric Bender
CW Staff

MOUNTAIN VIEW, Calif. — 3Com Corp. this month formed an Applications Software Division to develop and market software for networked personal computers and announced revenues of $13.2 million for the quarter ended Nov. 30.

The new division, headed by Robert Metcalfe, 3Com's founder and chairman, will offer both application development tools for system integrators and multiuser productivity packages for end users. With the upgrading of the unit, which was formed last June, to division status, 3Com has marked "the establishment of a critical mass" for applications software

and taken the first step in a plan to restructure into divisions, Metcalfe said. He noted that 3Com now has about 260 employees.

According to Metcalfe, the new division will work with outside suppliers in offering software development tools. As one example, he said, "we don't plan to do a data base ourselves, but we will make

it work on the net."

On the application software side, "we will be focusing on multiuser productivity tools — not spreadsheets or word processors or data bases, but rather productivity tools for more than one user," Metcalfe said. "The prime example is Ethermail." Planned enhancements for Ethermail include greater

reach to external environments, boosted memory capability and tighter integration with other applications such as calendars and file managers, according to Metcalfe.

3Com's $13.2 million second-quarter revenue represented a 223% increase from $4.1 million in the same quarter last year, the company reported. Net income for the quarter rose to $1.4 million from $664,000 a year ago. Quarterly earnings per share climbed from 6 cents in 1984 to 10 cents this year.

For the first half of the current fiscal year, 3Com's net revenues were $22.1 million, up from $6.2 million in the first half of last year, the company said. Net income for the first half was $2.6 million, up from $910,000. Earnings per share for the first half climbed to 19 cents, up from 8 cents for the same period last year.

Despite rapid growth in this period, 3Com President L. William Krause commented, "Our incoming order rate was lower than expected" and said that IBM's introduction of its PC Network may have caused some customers to review their network purchasing plans.

Head vendor cuts back business

CHATSWORTH, Calif. — Magnetic Information Technology, Inc., a maker of magnetic heads for floppy disk drives, recently announced that it would reduce its business and that its president, John Dante, has resigned.

Pete Sidhu, chairman and chief executive officer, said the company plans to continue operation in the U.S. and India on a limited basis. A search has begun for a new president, he said.

Sidhu, noting that 1984 has been a difficult year for the floppy disk business, said the company plans to move into other areas, including Winchester-type magnetic heads.

'And this is our most popular executive model.'

COMPUTER INDUSTRY

5 NICKELS AND DIMES

Analog Devices, Inc. recently reported that its profits rose 57% to $10.2 million, or 39 cents a share, from $6.5 million, or 25 cents a share, for the fourth quarter ended Nov. 3. Revenues for the latest quarter rose 39% to $84.5 million from $60.8 million during the corresponding year-earlier period.

Panophic Systems, Inc. reported revenues for its second fiscal quarter of $16.6 million, compared with $11.4 million for the same period a year ago. Profits were $3 million, or 35 cents per share, compared with $1.8 million, or 23 cents per share, in

the comparable quarter last year.

Computer Automation, Inc. announced a net loss of $589,000, or 29 cents per share, on revenues of $14.2 million for the first quarter of 1985, ended Sept. 30. A year earlier, the company reported a first-quarter loss of $2.8 million, or $1.40 per share, and revenues of $12.1 million.

Computer Communications, Inc. announced that revenues for the first quarter ended Sept. 30 declined 19% to $2.3 million from $2.9 million reported in the same period one year earlier. The company reported a net loss in the current quarter of $175,656, or 2 cents per share, compared with $246,295, or 5 cents per share, in the same quarter one year earlier.

Sterling Software, Inc. reported revenues in 1984 rose 103% to $18.7 million, up from $9.2 million last year. Profits for the quarter amounted to $1.1 million, or 25 cents per share, compared with $1.2 million, or 40 cents per share, last year.

Icot Corp. announced revenues for the three months ended Oct. 27 of $5.9 million, compared with $3.5 million in the corresponding period last year. Profits were $67,000, or 1 cent per share, compared with a loss of $986,000, or 11 cents per share, for the comparable period one year earlier.

The **MacNeal-Schwendler Corp.** reported revenues for the nine months ended Oct. 31 of $10.2 million, compared with $8.2 million for the same period last year. Profits

were $2.2 million, or 35 cents per share, compared with $1.8 million, or 32 cents per share, for the comparable quarter one year earlier..

Bishop Graphics, Inc. announced revenues for the fourth quarter of fiscal 1984 were $3.2 million, compared with $3.2 million in the same period one year ago. Profits were $243,000, or 12 cents per share, compared with $288,000 or 14 cents per share, in the year-earlier quarter.

Floating Point Systems, Inc. reported revenues for the fourth quarter of $32.4 million, compared with $29 million in the same quarter last year. Profits were $4.4 million, or 58 cents per share, compared with $4.4 million, or 50 cents per share, in the corresponding period a year earlier.

RECOVER

Bauer said he plans to avoid this diffusion of corporate energies in the future. With this in mind, he recently consolidated the company into eight divisions, all housed under the newly formed Systems and Applications groups. Both groups have distinct purposes, he said.

The Applications Group, which accounts for half of Informatics' revenues through its sale of software in corporate vertical markets such as legal, accounting, insurance and distribution, Bauer now shares a common sales and marketing team and is aiming to beef up its dealer base to 150 value-added resellers. The newly consolidated Systems Group, Bauer explained, will allow the company to position itself as a prime contractor for its federal clients — a sector of the firm's business that already is worth $35 million a year — and serve as a one-stop shopping center for corporate programming needs.

Informatics plans more acquisitions in the services area, noted Richard Lemson, Informatics' executive vice-president of Information. Lemson said that aggressive international expansion is projected for 1985, based on a recently established European major accounts program and an Informatics division in France.

Brian Boyle, an analyst with Gnostic Concepts, Inc., a market research firm in Palo Alto, Calif., said that Informatics' financial problems in 1984 were caused by the company's having "too many eggs in their Mark V basket," a product he called "obsolete before its time." To move out of its financial slump, he said, the company has to move ahead in 1985 with new products. However, Informatics' value-added orientation and high overhead costs make such a move difficult in the micro area, he added.

According to Peter Lowber, a senior market analyst at the Yankee Group in Boston, Informatics lacks the basic foundation software to grow into future vertical markets and address future DP concerns. The key products he sees missing from Informatics' arsenal are fourth-generation language system capabilities, MIS' future alternative to Cobol, and a full relational data base management product, the model for data bases of the future.

COMPUTER INDUSTRY

Systems Associates, Inc. reported revenues for the third quarter ended October 31 of $6.1 million, up 29% from $6.3 million one year ago. Profits were $747,000, or 30 cents per share, compared with $716,000, or 31 cents per share, in the corresponding quarter a year earlier.

Gerber Scientific, Inc, announced second-quarter profits of $6.4 million, or 57 cents per share, compared with $3.4 million, or 24 cents per share in the same period one year earlier. Revenues were $52.8 million, compared with $42.7 million in the corresponding quarter one year ago.

Tektronix, Inc. announced profits for the second quarter ended Nov. 10 of $22 million, or $1.14 per share, compared with $1.6 million, or 66 cents per share, in the year-earlier quarter. Revenues were $333.4 million, up 17% from $285 million in the comparable quarter one year ago.

Denelcor, Inc. announced a third-quarter loss of $3.9 million, or 38 cents per share, compared with a loss of $2.7 million, or 27 cents per share in the same period one year earlier. Revenues for the quarter were $411,000, compared with $191,000 in the same quarter one year ago.

Applied Magnetics Corp. a net loss for the fourth quarter of $1.9 million, or 20 cents per share, compared with a profit of $2.6 million, or 29 cents per share for the same quarter last year. Revenues were $35.1 million, compared with $31.5 million in the same quarter one year ago.

Cognos reported consolidated revenue for its wholly owned subsidiaries in the UK and the U.S. reached $26.3 million (Canadian) in 1984, a 47% increase from $17.9 million during the previous year. Profits increased 123% to $1.9 million compared with $802,615 in the corresponding period one year earlier.

group's total portfolio, he added. Specifically, ITT Commercial Finance has about $200 million worth of computer financing instruments due at any one moment and for the first 11 months of 1984 generated a volume of $860 million.

Brown claimed his company was, in 1980, the first to jump into providing financial services to retail computer dealers. He said it began by offering floor-plan financing — financing of retail dealers' shop floor inventory — for dealers of Apple Computer, Inc. equipment.

Currently, according to John Dobson, the ITT group's senior vice-president, the group provides 75% of the national retail financing market, dealing with almost 3,000 retailers.

In a move to expand beyond its original floor plan financing and related business services, Commercial Finance, as part of the consolidation, created two new divisions.

One, the Equipment Lease

and Finance Division, will provide installment loans and leases for new and used computer systems and other capital equipment. The second, the Automated Finance and Lease Division, will provide dealers, distributors and manufacturers with a computer-linked credit check and finance authorization service that reportedly can approve financing within three to four hours.

Hardware steady nerves'

Brown noted that rapid inventory turnover, product volatility in the retail computer market and increasing competition among dealers "requires steady nerves" in signing up dealers. He said his company has developed a profile and product turnover ratios that are used to evaluate good risks.

The company has also developed a specialized staff that is able to differentiate among various products and manufacturers and will only back retail operations selling leading products, he added.

ITT Commercial Finance is intent on capturing an early lead in the leasing of low-end equipment, an area regarded with scepticism by traditional lessors because of the rapid product cycles and price cuts that have accompanied the expansion of the micro market.

Dobson acknowledged that leasing of low-end equipment has not caught on yet. However, he claimed, as competition and the retail level intensifies, dealers looking for an edge "will have to turn to end-user financing."

COMPUTER INDUSTRY

⚡ SUPERSHORTS

Triumph-Adler AG confirmed **Pertec Computer Corp.** of Irvine, Calif., will remain part of Triumph-Adler North America, Inc., Hartford, Conn., ending plans to sell Pertec.

■

Information Solutions, Inc. (ISI) reported that **Prime Computer, Inc.** and ISI have agreed in principle to enter into a joint venture to market turnkey computer hardware and software systems to the lodging industry.

Under the terms of the tentative agreement, Prime will assume the primary and exclusive responsibility for marketing ISI's hospitality sys-

tems to property management companies, hotels and motels as well as resorts.

■

Relational Technology, Inc. has signed two separate joint development and marketing agreements, making Ingres available on Amdahl Corp.'s UTS operating system and on Pyramid Technology Corp.'s computer systems.

■

Tandberg Data, Inc. announced plans to consolidate its Armonk, N.Y.-based terminal division and its data storage division into one central location at the data storage division's new manufacturing facility in Anaheim, Calif.

Tandem Computers, Inc. and **On-Line Software International, Inc.** announced they have settled their lit-

igation involving the Guardian trademark used for computer software products.

In accordance with the settlement, the New Jersey lawsuit will be dismissed as well as a related administrative proceeding in the United States Patent and Trademark Office.

Under the terms of the agreement, On-Line Software has agreed to abandon its federal trademark application and not to oppose Tandem's application seeking federal trademark registration of the trademark Guardian.

■

Honeywell, Inc. has formed a marketing support group to improve the availability of application software for DPS 8 and DPS 88 large-scale computers operating under Gcos. The applications marketing group will focus on scientific and commercial cross-industry packages, with initial

emphasis on financial, distribution and engineering / support applications.

■

The **Association of Data Processing Service Organizations** has reached an agreement with **National Information Systems** to provide joint purchasing of computer peripherals with **Data Securities International** to provide a new protection service to safeguard software.

■

Control Data Corp. announced that it will donate up to 10 Cyber 180/810 superminicomputer system totaling $5 million to universities which are selected for the National Science Foundation's (NSF) Engineering Research Center program. NSF applicants had the option of requesting the Cyber 180 systems in the first phase of the program.

TANDEM

He declined to discuss specific new products that the company may introduce during the coming year. He said Tandem has not canceled any development projects recently but has "redirected" some of them.

He said the company plans this year to introduce some low-end products aimed at an office-type environment. The company's systems have been used widely for on-line transaction processing by users such as banks, airlines and telephone companies. Conceding that the company "didn't concentrate" on its relationships with software houses in the past, Treybig said Tandem has worked to correct that deficiency. "We made the mistake of not realizing that we had become a big company and that we had a lot of benefit for software houses," he said. The company has established a business alliance program in which it encourages and provides support for software developers.

Software is vital to Tandem's fault-tolerant computers, which rely on parallel processors and sophisticated software to allow the computers to work together, as well as work around a unit that may have failed.

As the company has grown from no revenue in 1976 to more than $500 million for the last fiscal year, Treybig said he has tried to maintain the progressive, people-oriented corporate culture for which the Cupertino, Calif., company is well known.

"There are things we've done well and haven't done well," he said. "I think we went through lots of transitions, but I don't think it affected our goals from a people or management point of view."

On the subject of start-up companies that have tried to challenge Tandem in the fault-tolerant market, Treybig noted that most have failed for a variety of reasons. He believes the availability of venture capital funds for some of the start-ups created a crowded market in which only a few firms could survive.

When Tandem started, he noted, there were no other companies in the fault-tolerant market.

"The start-ups have so much money, and they're all competing against one another, that it's difficult to make a profit. So a situation that appears to be much better, because there's a lot of money, is really a disadvantage, because you're going to have lots of other competitors just like you," he said.

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